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MARCH/APRIL 1998 VOL. 1, NO. 2

HANDHELD PC

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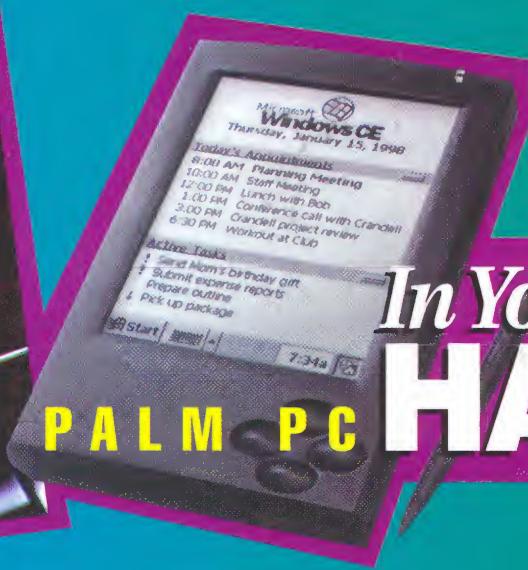
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MARCH/APRIL 1998

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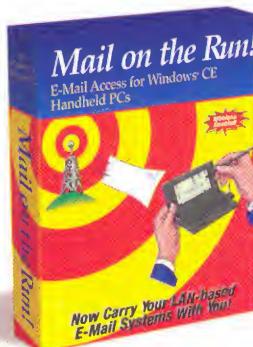
Mail on the Run! software provides unprecedented remote access to the world's most popular LAN-based e-mail systems, including Microsoft Mail®, Lotus® cc:Mail™, Microsoft Exchange Server, Lotus Notes® Mail and Novell GroupWise™. The complementary *InSync!*® product allows remote synchronization of calendaring and scheduling data. Applications based on the Corporate Connection™ software provide remote access to corporate databases. All products can be used over wireline and wireless networks. Now you have access to all your critical information from a Windows® CE Handheld PC (H/PC), no matter where you are.

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Calendaring and Scheduling

The *InSync!* product provides users with the ability to remotely synchronize Calendar, Tasks and Contacts databases on their H/PCs with group scheduling and calendaring data stored in Lotus Notes. Support for Microsoft Schedule+/Outlook and Lotus Organizer® will be available soon.



Data Base

The Corporate Connection product contains Open Data Base Connectivity (ODBC) APIs for creating Windows CE applications for database access. With it, you can remotely retrieve and update corporate information.

Multiple Platforms

The *Mail on the Run!* family of products is supported on all versions of the Windows CE operating system. *Mail on the Run!* is also available for Windows 95, and both the *Mail on the Run!* and Corporate Connection products are available for Apple® Newton MessagePads..

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Flexible communication options provide a major advantage of the *Mail on the Run!* family of products. You can access your e-mail, calendar and corporate data directly or over the telephone network. By adding a wireless modem card, you can access this same information over ARDIS™, the nation's largest two-way wireless data network, covering 90% of all business activity in the US, Puerto Rico and the Virgin Islands.

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From The Editor

Rich Hall

Windows CE is growing by leaps and bounds.

Released last November, the new version 2.0 has given rise to a new raft of handheld PCs with more features, better connectivity, bigger screens, color displays, and a host of new products from independent vendors.

In this issue we take a closer look at Windows CE 2.0 in the form of the Hewlett-Packard 620LX, one of the new color-screen handheld PCs. If you are considering upgrading to any of the new H/PCs, you'll want to take a look at this review.

Another big change in the Windows CE market was announced this January at the Consumer Electronics Show in Las Vegas. Microsoft, along with a host of computer manufacturers and independent developers, introduced two new platforms for Windows CE 2.0: the Palm PC and Auto PC.

The Palm PC is a pen entry device that is small enough to slip into your shirt pocket. It comes with Pocket Outlook's Calendar, Contacts, Tasks, and Inbox applications and built-in handwriting recognition capability. The Palm PC easily synchronizes with your desktop and is already being supported by over 60 independent developers. If the H/PC is too big and too powerful for your needs, you'll want to check out our Palm PC section.

The Auto PC is the other new Windows CE device we look at in this issue. It's about the size of a car AM/FM radio and fits in the AM/FM's dashboard slot. You don't type on a keyboard, or write on a screen - you talk to it and it talks back. With both hands on the wheel you can tune your radio, listen to your email, look up an address, get turn-by-turn directions to that address, and more. Find out more about the Auto PC inside.

One of the common limitations all three Windows CE platforms have is internal file storage memory. All three have a way around that limitation, in the form of PC storage cards. Mark Scardina explains these cards in detail and gives some specific advice on which type you should select.

Windows CE 2.0 devices automatically synchronize with the Windows 95 version of Outlook. If you use another desktop PIM, you'll want to take a look at David Shier's quick review of synchronization software for Windows CE. If you yearn to know more about how synchronization works, see Mike Blanchette's in-depth explanation of the process.

Our regular columnists explore issues important to individual and organizational users. Andrew Seybold reports on the Portable Computer and Communications Association (PCCA) and its efforts to develop the standards necessary for reliable wireless communications. John Jerney reports on technology that will aid text and data entry on Windows CE devices by completing words after a few keystrokes. Carl Merkle delves more into the mysteries of successfully deploying handhelds to a corporate workforce.

Take a fast-paced look at a day in the life of a real estate attorney; make your H/PC more useful, easy to use, and fun with Quick Tips; find the latest Windows CE web sites; and more.

In the final analysis, you are the experts! What's good about Windows CE? What needs to be improved? What do you want to see more (or less) of in this magazine? We welcome any and all feedback and appreciate tips, profiles, and other insights that you want to share with your fellow users. E-mail me at rich_hall@thaddeus.com, or Hal Goldstein at hal_goldstein@thaddeus.com.

Rich Hall



March/April 1998

Increasing Your Personal Power by Expanding Your Handheld PC's Potential

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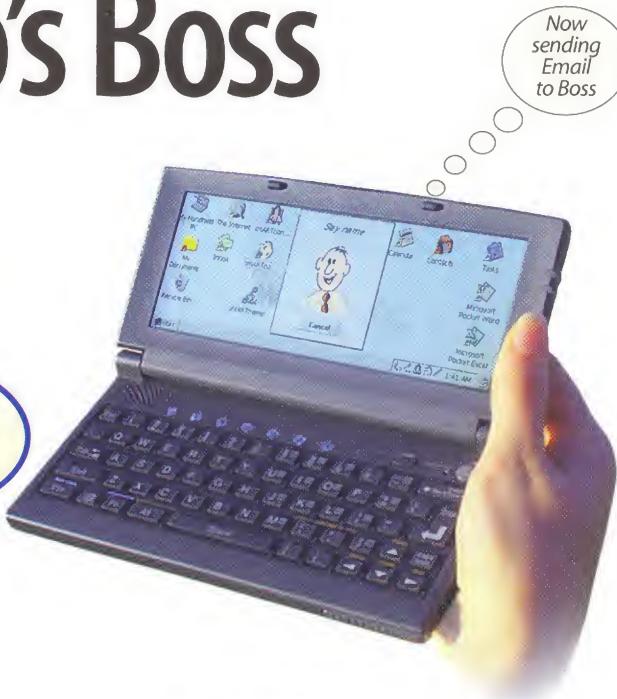
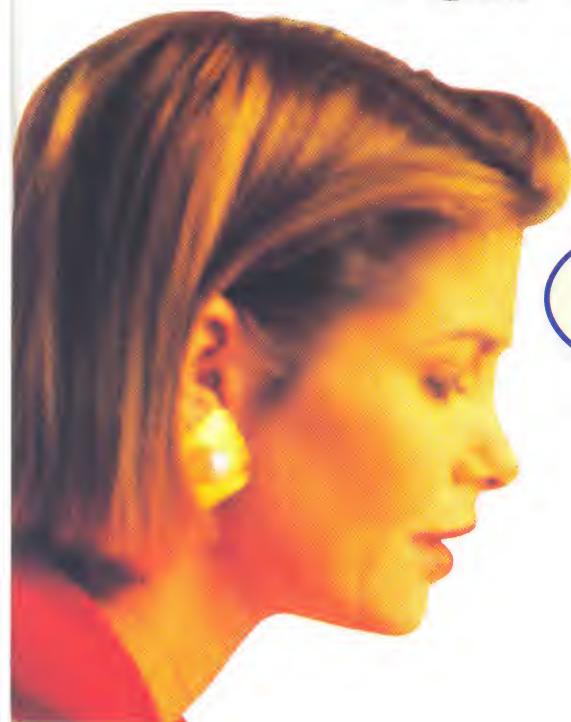
The Handheld PC Magazine (ISSN 1093-2585) is published by Thaddeus Computing INC, at 110 North Court Street, Fairfield, IA 52556, USA. Application to mail at Periodicals Postage Rates is pending at Fairfield, Iowa. Subscription rates payable in U.S. dollars, checks drawn on a U.S. bank, or by credit card — one year: \$34.95; two years: \$59.95. Postage: U.S. and U.S. possessions free; Canada, Mexico add \$6 per year; other countries add \$18 per year. Published bi-monthly starting Jan/Feb 98, plus one bonus issue, in late fall/early winter. Please allow four to six weeks for receipt of first issue. Executive, Editorial, Circulation, Marketing and Advertising Offices: 110 North Court Street, Fairfield, IA 52556. Telephone: (515) 472-6330, Fax: (515) 472-1879.

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Viva Las Vegas?

Microsoft and Windows CE Manufacturers strut their stuff at COMDEX and CES

By Rich Hall

Managing Editor, Handheld PC Magazine

One of the ways we get Windows CE information is to go to computer shows. Another is to surf the Internet. Both have one thing in common - the amount of distracting information they provide.

I went to two shows recently. The first was COMDEX, in late November. The second was the Consumer Electronics Show (CES), which finished on January 10 — yesterday! A lot of the information in this issue is from those two shows. What I thought I'd do in this article is give you a little feel for what it's like to go to one of these shows.



COMDEX was packed! Over 200,000 in attendance, packed shoulder to shoulder. I had to weave and side step to get anywhere.

I managed to get to the Microsoft Pavilion and to many of the H/PC manufacturer's booths. They were busy showing off the new Windows CE 2.0 handheld PCs. Casio, Compaq, LG Electronics, Hewlett-Packard, Hitachi, NEC and Philips were all showing new Windows CE 2.0 handhelds, and two new players entered the market: Ericsson and Sharp. (A review of the HP 620LX can be found on page 27 of this issue.)

The Microsoft Partners Pavilion had a rather large section reserved for companies showing Windows CE products. Many independent software vendors were releasing new versions of their Windows CE software. This section was packed, shoulder to shoulder, for the entire show. I kept putting off going to this section until the crowds thinned

out, but they never did. The new products section of our January/February issues describes most of the products I saw.

COMDEX was sensory overload to the max. It gets bigger each year, with more exhibitors competing for your attention. They will try almost anything to get your attention. The problem is that with everybody playing loud music, you can't hear yourself think.

Some of it was entertaining. The Philips Pavilion had the Velo Dancers, a high-energy group of singers and dancers singing blues songs with lyrics like:

I showed her my Velo handheld PC
When I'm on the road it travels with me.

Iomega had a really intense show where hard looking women in extremely short skirts sang about how impressed they were with Zip drives and mass storage. I thought it was a bit much, but it was always crowded. By the way, Iomega is coming out with the "Click," a very small storage device that will connect to the H/PC and provide up to 40 MB of file storage on a removable disk about the size of a 50 cent piece.

I always ask the IBM guys if they are going to do anything with Windows CE, and they always get testy. They were showing a concept car with dashboard computer (NOT an Auto PC).

At lunch time on Wednesday I stopped by Rafi's Glatt Kosher Kitchen (in the Convention Center) and had a great sandwich.

Back out on the floor, I walked by a booth where an energetic (and annoying) young person stepped out and placed an "I love such-and-such a product" sticker on my

lapel. I didn't love this product (I'd never even heard of it) and as I walked away, I ripped it off and threw it in a trashcan. Later, when using the restroom, I saw three of these stickers plastered on the wall above one of the urinals — and you probably know what I'm going to associate this product with for a long, long time.

Latter that day I talked with Eddy, manager of the motel I stayed at in Las Vegas during the show. I asked him if he had ever been to COMDEX.

"Yea, I went once," he said. "Nothing but computers, and I'm not into computers." Eddy did like the magicians convention that came every February. It probably wasn't as crowded.



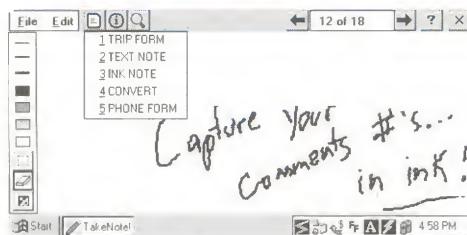
Marching through CES

The Consumer Electronics Show (CES) is the big consumer electronics event of the year. Microsoft chose CES to roll out its two new Windows CE platforms, Palm PC and Auto PC. These two events dominated the show. I'll describe these new platforms more completely on pages 10 and 20.

They don't scream at you as much at CES, and there are only about 100,000 in attendance, so it's an easier experience. Like COMDEX, CES was awash with stuff not directly related to Windows CE. I saw cables, accessories, boom boxes, audiophile systems, and chessboards with built-in computers. I

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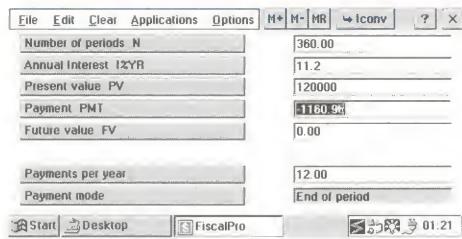
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- Ink notes, text
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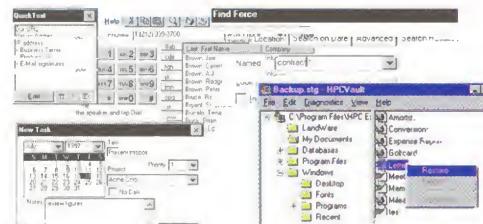
Features

- Simple form filling metaphor
- Amortizations
- TVM calculations
- Investment analysis
- Unit/Currency conversions
- Single tap calculations

Fiscal Pro employs a "form filling" metaphor to provide you with a rich problem solving environment that is unparalleled in its ease of use, power and flexibility. Just enter the known quantities and tap to solve for the unknown value. Ten different calculation forms are provided.

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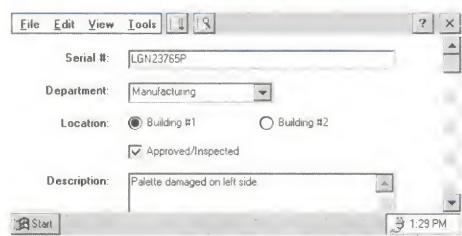
Features

- Search by filename, date or document text
- Recover a file from backups
- Fast and flexible dialling
- Rapid entry of glossary text or date/time stamp
- Quickly add a new task
- Quickly add a new contact
- One tap application launch

Powerful productivity add-ons for your Windows CE device. You'll now be able to search by filename, date or text with FindForce, recover a file from your desktop's backup image, dial the phone, enter a new task/contact with ease, reduce typing through the use of quick access glossary and launch any file from a button in the status area.

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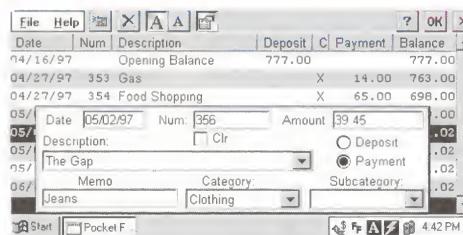
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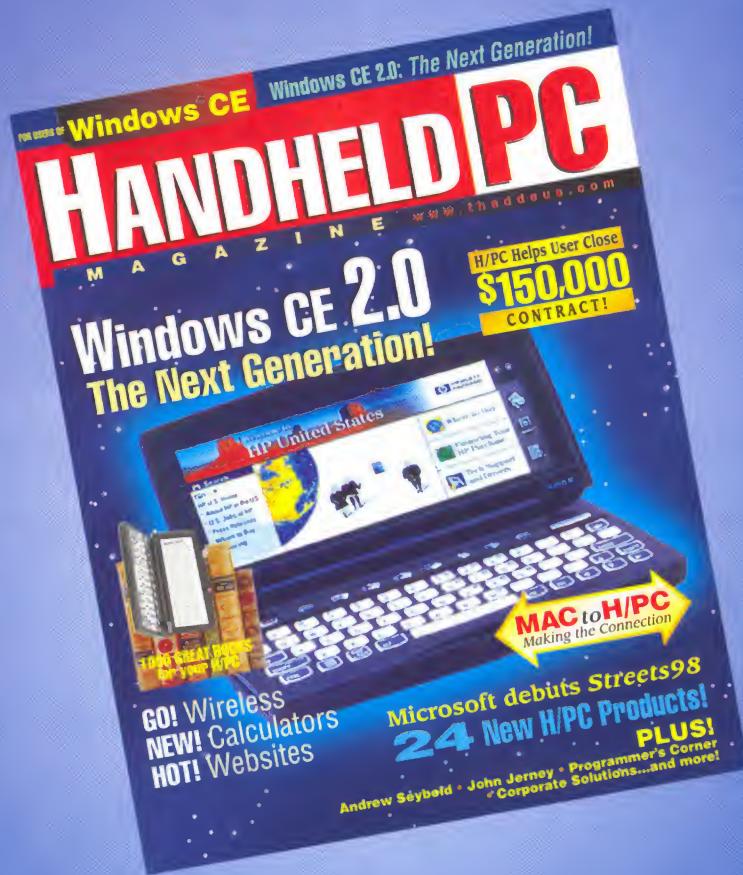
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saw handheld televisions in the \$60-70 range, a headset game controller (you looked at the bad guy and shot him). I saw plug in solar panels to power small and large devices. A number of companies offered unlimited Internet access for under \$15 a month. A division of Panasonic was showing off ergonomic chairs that gave you wonderful massages. (This booth was extremely popular in the late afternoon.)

There were cordless phones, cellular phones, satellite phones, tape players, DVD disks, watches and even computerized coffee makers. And over in the Sands Convention Center the audiophile section had every conceivable combination of woofers, tweeters and amplifiers you could imagine. The manufacturers loved to display their products in high-end customized cars that only Bill Gates could afford. Fittingly, a portion of the bottom floor of the Sands Convention Center was reserved for the "Adult Entertainment" portion of the consumer electronics industry.

The main section of the Las Vegas Convention Center housed all the Windows CE stuff. The majority of Microsoft's pavilion was devoted to the Palm PC and Auto PC. Microsoft demonstrated the new devices to all comers. The Microsoft Partners Pavilion had small kiosks where manufacturers and independent software vendors showed off their wares. The

pavilion was crowded both days I was there.

Scattered around the rest of the convention floor were a few of the major computer manufacturers. The Philips area was as large as the Microsoft Pavilion, and adjacent to it. Philips was showing many of its consumer products, and devoting a lot of its floor space to the Velo H/PC and Nino Palm PC.

Casio was not only showing their new Palm PC, they were showing their new "IR Web Watch." It was a hefty wristwatch that not only told time, but reminded you of appointments, and let you look up contact information and memos. The IR Web Watch had an infrared port and you could use proprietary software on your desktop PC (with IR port), handheld PC or Palm PC to send data to the watch. The IR Web Watch will be priced around \$200-\$250 and be available towards the end of 1998. Casio was also showing an H/PC with a color display. I was told that it was "ready to go" but that Casio was watching sales of the Hewlett-Packard 620LX and the Sharp Mobilon 700C (both with color displays). The implication was that if sales of those two color screen devices were good, Casio would introduce a similar product.

I also visited the Everex and Uniden booths to see their Palm PCs. Everex was displaying their "Freestyle" Palm PC in different

colors. Uniden wasn't displaying a Palm PC and told me it was still in development.

I visited a number of companies developing software, hardware accessories and services for the Palm PC and Auto PC. Check out the product listings on pages 15 and 22 for more on that. I finally got out of CES on Saturday afternoon. It was a tiring trip, but fruitful in new Windows CE knowledge.

I flew out on a certain airline whose name I won't mention. For dinner they served a nice little chicken sandwich about the size of a Hostess Twinkie. I had to change planes in Minneapolis. My connecting flight was departing in 20 minutes from gate 87 — only a mile-and-a-half away (or so it seemed). The plane was one of those cute little turboprops with a bathroom the size of a broom closet. Pilot Bob got on the horn half way through the flight and proceeded to give us the technical specifications of the aircraft. Two women in the row behind me had had a little too much to drink and were cracking up with every new detail. Pilot Bob made a point of telling us that the company was replacing its turboprop aircraft as fast as it could — I felt reassured.

I got into Des Moines, drove home, and got into bed at 2:30 in the morning. It was very good to be home.

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NEC MOBIL PRO • PSION EXPERT PAD



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OMNIGO 100 • MOTOROLA ENVOY 150, MARCO
SHARP ZAURUS 5000, 5700, 5800



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On January 7 at the Consumer Electronics Show (CES) in Las Vegas, Microsoft announced two additional Windows CE platforms: Palm PC (see below) and Auto PC (page 20). Both of these new PC Companions use version 2.0 of the Windows CE operating system. Both are targeted at "Mobile Windows Professionals."

Inside Windows CE

*Can't afford to sit at a desk all day long?
Still need to access appointments,
contacts, tasks, etc.?
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For the more than **60 million** of you,*

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PC Companions

Palm PC

A World of Info in the Palm of Your Hand

By Rich Hall, *Managing Editor, Handheld PC Magazine*

Palm PC is a small "shirt pocketable" pen-entry device (with no keyboard) that lets users carry important information with them wherever they go. Palm PC comes with Pocket Outlook (Calendar, Contacts, Tasks and Inbox) and other applications optimized for pen-entry. Palm PC easily synchronizes with the desktop version of Outlook. Independent vendors will provide synchronization solutions for other desktop Personal Information Managers. Palm PCs will be priced in the \$300-\$500 range.

Both the Palm PC and the original H/PCs are designed for mobile users - people on the go, who spend a fair amount of time away from the desk, but still need access to important data. The difference in the two user groups is that Palm PC users will rely on their PC companion more to access information already on the device and to connect to networks. They will be able to enter data via the touch screen, but will not do as much of this as H/PC users.

All Palm PC data is entered via pen



strokes on the touch-sensitive screen (or transferred from your desktop, notebook, or H/PC) when you synchronize data. All Palm PCs come with Communication Intelligence Corporation's Jot software built in for handwriting recognition capability. Microsoft will include a "Soft Input Panel" version of Jot, which will enable handwritten input within an area at the bottom of the screen. CIC will offer an upgrade version of Jot that will allow full-

screen handwriting recognition and soft keyboard (see page 17 for more on Jot).

The Palm PC will communicate to the rest of the world in a number of different ways. All will come with a built-in IrDA infrared port, allowing them to pass data back and forth between other IrDA equipped devices (including the H/PC and Auto PC). The Palm PCs will also include a serial connectivity port and CompactFlash slot, supporting optional connectivity cradles for seamless connectivity and synchronization, PC Card modems and wireless connectivity solutions. In addition, some Palm PC manufacturers will

include built-in modem support.

The actual size of the Palm PC will vary between manufacturers, but it's intended to be light-weight and smaller than the H/PCs. [Note: Although the Palm PC is certainly a "handheld," to avoid confusion I will only refer to Windows CE devices with keyboards as "handheld PCs" or "H/PCs"]. All of the Palm PCs are about 3.5" wide, 5" long, and 1" thick. The first batch of Palm PCs will have a

240x320 pixel monochrome touchscreen (a vertical orientation as opposed to the H/PCs horizontal screen). The operating system and applications will reside in 4 MB or 8 MB of ROM and the units will come with a minimum of 2 MB of RAM (expandable to 8 MB). The Palm PCs I saw were powered by a variety of CPUs, all in the 60-75 MHz range. The Palm PC will come with a built-in microphone and speaker, and a built-in "Voice notes" application to record short voice memos. It will be powered by AA or AAA batteries, depending on the manufacturer.

In addition to the Pocket Outlook applications mentioned above, Palm PC will come with a note-taker utility called InkWriter, World Clock, Calculator, and the game Solitaire. Missing from the Palm PC are Pocket Word and Excel. Replacing Pocket Internet Explorer is "Channel Browser." This very interesting application lets you select offline the web sites you want to visit and the information you want to download. When you synchronize with your desktop PC, information from the sites you have selected is automatically downloaded to your Palm PC for off-line viewing.

At the November 1997 COMDEX I took a first look at the some of the new batch of Windows CE 2.0 H/PCs (see page 27 and 57 this issue). I noticed that most were growing larger, in what I take to be an attempt to make the keyboards larger and easier to type on. The Palm PC takes the opposite direction, abandoning the keyboard all together in favor of a simpler way of accessing and entering personal information.

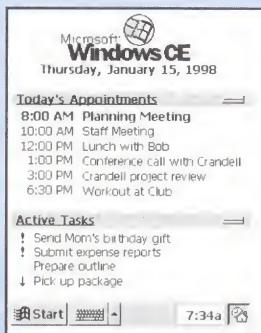
Palm PC at CES

As I mentioned above, the Palm PC was officially launched at this year's Consumer Electronics Show. Microsoft, as well as manufacturers of the Palm PC, and independent software/hardware vendors showed the world their wares - and there was plenty on the table.

A lot to choose from

As I went to press there were seven manufacturers working on Palm PCs. You can expect the Palm PC in a variety of colors, sizes, shapes, styles and options. I also expect the Palm PC to be well-supported by independent software vendors. Check out the product list on page 15 for some of the software and accessories already announced for the Palm PC.

Palm Reading — Windows CE Style



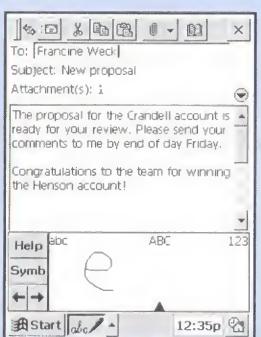
Palm PC's main Desktop screen summarizes your appointments and tasks for the day.



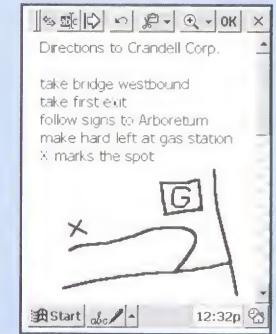
The Calendar's daily view shows your appointments and time allotted for them. You can tap and drag the appointment to a new time. You can also tap on the arrow button in the lower right corner of the appointment and pull it down to make the appointment longer. Calendar now has weekly, monthly and yearly views.



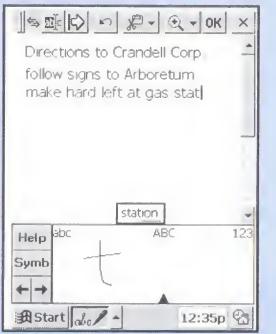
Contacts displays an alphabetized list of names and phone numbers. Select a name from the list and more complete information is displayed at the top of the screen. Tap on the column headers to alphabetize by that column or to change between ascending and descending order.



Inbox lets you compose and send email, and read incoming email. You can send and receive email from your desktop PC when you synchronize, or can connect directly to an ISP via modem to send and receive email on the Palm PC.



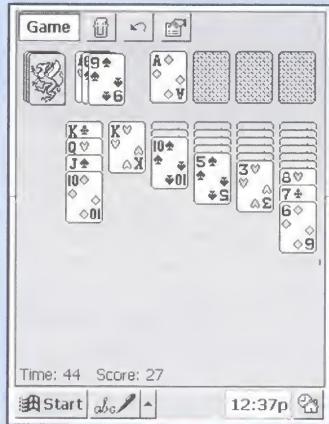
Palm PC's Note Taker lets you enter text or drawings in ink.



You can also call up the handwriting recognition (shown here) or soft keyboard features to enter text in Note Taker.



Palm PC's Channel Browser lets you download Internet content automatically when you synchronize with your desktop PC.



Every version of Windows I've ever seen comes with Solitaire, and the Palm PC is no exception. Expect plenty of games for this platform.

7 New Palm PCs!

Casio



Cassiopeia E-10 Palm PC

Casio has announced the introduction of its new Palm PC - the Cassiopeia E-10. This pen-entry device is approximately 3.2" w x 4.9" h x .72" (8.13 x 12.45 x 1.83 cm), weighs approximately 5 1/2 oz. (171 g), and slips into a purse, shirt pocket or jacket pocket. Data input is handled via pen input or transferred over from another PC.

The E-10 uses the NEC VR4111 RISC

high-speed processor CPU and comes with a backlit 240 x 320 pixel monochrome display. Applications and other features are accessed by tapping screen icons and buttons. The new Cassiopeia also has a hardware dial for scrolling up and down the screen, as well as hardware buttons for ENTER, ESC, and to launch frequently used applications.

The E-10 connects with other computers via serial port or IrDA infrared port. Its CompactFlash card slot can be used to add additional memory or CompactFlash card devices such as fax/modems, wireless messaging devices and the like. In addition, the E-10 comes with a cradle, which connects to your desktop PC via cable and lets you quickly synchronize data between the two devices. The E-10 will be powered by two AAA alkaline batteries and a lithium backup battery. It will ship with the cradle and cable mentioned above, and a carrying case. Options will include a modem adapter, Compact Flash card, and AC adapter.

The E-10 comes with the Palm PC suite of personal information management, communication, and synchronization applications more fully described on page 41. These include Calendar, Contacts, Tasks, Inbox, ActiveSync (to synchronize with Microsoft Outlook) NoteTaker, Voice Recorder and

Mobile Channels.

I saw an E-10 (and all of the Palm PCs) at the January Consumer Electronics Show. Casio wants to be first out of the gate again (they shipped the first H/PC over a year ago). Their Palm PC comes standard with a serial cable, carrying case and connectivity cradle. Casio will offer options including a modem adapter, AC power adapter and CompactFlash memory cards and a pager card to fit into the CompactFlash slot. Casio plans to release a number of new E-10 applications in addition to the standard Palm PC applications, but as of press time, we had no word on what those might be. I would expect software and cable to interface with their digital camera, but that is just speculation on my part.

The E-10 will be available at the end of Q1-beginning of Q2 1998 and will be priced under \$300. For further information on availability, contact your local Casio dealer or Casio, Inc. USA; Phone: 888-204-7765 or 973-361-5400; Web site: www.casio.com

Everex



Freestyle Palm PC

Everex Systems also announced its new Palm PC, the Freestyle built around the NEC VR 4102 MIPS RISC processor. It measures 4.8 x 3.2 x .7 inches (12.2 x 8.1 x 1.7 cm), weighs 5.3 oz (150 g) and easily slips in a shirt pocket or purse. The Freestyle features 8 MB of internal ROM for storage of built-in software and from 2 MB to 8 MB of DRAM for data storage and program operation. The Freestyle has a 240 x 320 pixel backlit monochrome display, built in speaker and microphone for voice record/playback capability.

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and alarm notifications. Appointment and paging notifications can also be customized to alert users via flashing LED or noiseless vibration option. The device also has an all-in-one rocker switch and four instant-access buttons for one-handed operation and quick launch of the most used applications.

The Freestyle comes standard with a Compact Flash slot for additional storage memory or wireless modem and one-way pager cards. In addition, it comes with a foldable connectivity cradle to provide seamless data synchronization between the Palm PC and desktop or notebook PCs. Freestyle has a serial port and IrDA infrared port. It is powered by two AAA batteries.

Freestyle comes with the standard Palm PC Windows CE applications built in. Everex announced that Freestyle will also come with additional productivity applications from leading ISVs, including utilities for faxing, printing, handwriting recognition, and expense management.

The optional Everex Freestyle Mobile Cradle is also available. This device comes with an integrated 33.6Kbps fax/modem and additional batteries. Additional accessories will include memory upgrades, wireless network and modem cards, and rechargeable NiMH batteries.

Two versions of the Everex Freestyle will be available through U.S. and international retail and reseller channels. For more information contact: Everex Systems; Phone: 800-EVEREX1; Web: www.everex.com

Palmax



Palmax PD-300 Palm PC

This Palm PC comes with a docking cradle and supports the full range of Palm PC software and hardware features. It uses a 60 MHz Hitachi SH3 RISC CPU and comes with 2 MB of RAM (expandable to 4 or 10 MB), 8

MB of ROM (expandable to 12 MB), a 240x320 pixel grayscale backlit monochrome touch screen, a CompactFlash card slot and IrDA infrared port. The PD-300 connects to a desktop PC via a cradle and cable. It has a built-in speaker and microphone and comes with headphones. It is powered by two AAA alkaline batteries (included) or an NiMH rechargeable battery pack (optional). In addition to the rechargeable battery pack Palmax will also market an optional CompactFlash memory card and application software for the Palm PC.

The PD-300 will be available in the second quarter of 1998. For more information contact Palmax; Phone (in Taiwan): +886-2-2266007; Email: palmax@palmax.com.tw; Web: www.palmax.com.twfreestyle.com.

LG Electronics

LG Electronics Palm PC

LG Electronics was showing its Palm PC at the Consumer Electronics Show in January, but they don't have a release date set yet. The product is the same Palm PC form factor as others describe here, with the standard applications and hardware. The LGE Palm PC will be priced in the \$300-\$400 range.

For more information, contact your local LG dealer or LG Electronics Customer information Center; Phone: 800-243-0000; Web: www.lge.co.kr

Philips



Philips Nino Palm PC

Philips Mobile Computing Group's entry into the Palm PC market is the Nino, a pocket-sized personal companion based on the Windows CE 2.0 operating system. As with other Palm PCs, applications are accessed by

tapping screen icons and pressing buttons on the device.

The Nino is approximately 5.3 x 3.4 x .8 inches (13.4 x 8.7 x 2.0 cm) and weighs 7 oz (200 g) and easily fits into a shirt pocket. Nino uses a 75 MHz MIPS R3900 CPU and will come with 4 MB or 8 MB of RAM. It has a 320x240 pixel backlit display with control dial. For communication with the outside world the Nino has a built-in, low power 2.28 Kbps modem. Its RS-232 serial port and IrDA infrared port can be used to connect to and synchronize with your desktop PC, and its Compact Flash slot lets you add storage memory or other Compact Flash card devices.

Nino comes with a CR 2025 lithium backup battery and a rechargeable NiMH battery pack which recharges in the device when you connect it to its AC power adapter (which also comes with Nino). If your battery pack runs out of power away from the charger, you can also use two AA batteries. Both models of the Nino come with a docking station, which lets you connect and synchronize with your desktop PC, as well as connect with AC adapter to power the Nino and charge the battery pack.

Two LEDs remind you of charging status, communication status, and signal you when you receive a message or a Calendar appointment comes due. Four quick start buttons launch the most commonly used applications. Nino also comes with Audio In and Audio Out capability to record and play back messages or to generate phone tones for auto dialing. It also comes with the software necessary to use the Audio In and Out capability.

Nino comes with Soft Keyboard, which displays a keyboard on your screen and lets you tap the characters for quick, positive data entry in all applications. It also includes "T9," a utility by Tegic that facilitates data entry by predicting words and character strings you enter. In addition, Nino comes with SmARTwriter handwriting recognition software, and voice command recognition software. The package will also come with Nino-specific applications, which will be announced later.

I saw the Nino at the January Consumer Electronics Show. It is a sleek and stylish device, with a flip-over cover to protect the screen. The built-in modem will help differentiate the Nino from the other Palm PCs, but it also makes it more expensive than most.

Philips will release two versions. The 4 MB Nino with docking station, AC adapter and carrying pouch will retail for approximately for \$400. The 8 MB Nino with the same accessories will retail for approximately \$450.

For more information contact Philips

Inside Windows CE

Mobile Computing Group; Phone: 888-367-8356 or 408-558-2200; Fax: 408-558-2222; Web site www.mobile.philips.com (then go to the Nino Store).

Samsung



Samsung InfoGear Palm PC

This Palm PC comes with a built-in 14.4 Kbps modem, allowing you to send faxes, pages, and send/receive email on the go. It utilizes the NEC 75MHz MIPS processor and comes with 2MB RAM (expandable to 8 MB) and 4 MB ROM (expandable to 8 MB). It has a 240x340 backlit grayscale touchscreen and is powered by two AA alkaline batteries or an NiMH rechargeable battery pack (optional). The unit comes with voice recording and playback, CompactFlash slot, connectivity cradle and a 10-pin modem connector. It has the standard suite of Windows CE Palm PC applications. It will be available in the second quarter of this year for an expected price of

between \$300-\$400.

I saw the Samsung InfoGear at CES. In fact, many of the independent vendors displaying products for the Palm PC were using the InfoGear. It was displayed with a data synchronization cradle, which comes standard with the device.

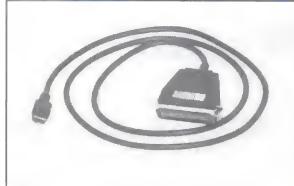
For more information, contact your local Samsung dealer or Samsung Electronics America. Phone: 201-229-4000; Fax: 201-229-4019; Web: www.sosimple.com

Uniden

Uniden Palm PC

Uniden plans to introduce a Palm PC later on this year, but has released no details.

New! Link-A-Printer II Smaller size & Attached cable



Link-A-Printer II is a serial to parallel converter that allows direct printing from your Windows CE HPC to any parallel printer. It also works with the HP 100/200/300LX and the HP OmniGo. Some HPCs may require bPrint software.

\$79

Also Available Link-A-Printer I

Requires HPC to computer connectivity cable and optional battery Features auto on/off fixed 9600 baud

\$59

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Palm PC Products

Palm PC products listed here include hardware, software and services for the new Windows CE 2.0 platform. Prices listed are suggested retail prices. Listings do not represent an endorsement by Handheld PC Magazine. To announce product in our next issue, email us at editor@thaddeus.com.

Hardware

Accessories

PDA Starter Kit

The PDA Starter Kit includes four accessories:

WriteRight Screen Enhancements are screen overlays that prevent screen scratches, improve handwriting recognition, and reduce glare;

Karma Cloth buffs out minor screen scratches while removing dust and debris;

Brain Wash is an intensive two-step cleaning system which restores the original luster to your screen while removing dust and smudges;

The Desktop Stylus is ergonomically designed to fit your hand and prevent muscle strain.

Available in late Spring 1998

Price: \$69.96

Concept Kitchen

Phone: 415-252-3333; Fax: 415-252-3323

Email: info@conceptkitchen.com

Web: www.conceptkitchen.com

WriteRight Screen Enhancements

Thin, clear, textured screen overlays that prevent scratches, reduce screen glare, and improve handwriting recognition. Helps eliminate screen scratches by providing a thin protective layer between the stylus and the PDA screen, with no reduction in screen sensitivity. Helps improve handwriting recognition through the use of a surface texture that simulates the natural feeling of writing on paper with a normal pen.

Available late Spring 1998

Price: \$27.95

Concept Kitchen

Phone: 415-252-3333; Fax: 415-252-3323

Email: info@conceptkitchen.com

Web: www.conceptkitchen.com

Communication

CF Bar Code Wand Card

This CompactFlash form factor card transforms any Palm PC into a portable data collection terminal. The ultra-low power CF Bar Code Wand Card system combines Socket's new CF Serial Card with Welch Allyn's SCANTEAM(tm) 6180 bar code scanner/decoder. Insert the card into a Palm PC and use the attached pen-like wand to send bar code data directly into any Windows CE application.

Available: March 1998

Price: \$399

Socket Communications, Inc.

Phone: 800-552-3300 / 510-744-2700; Fax: 510-744-2727

Email: serial@socketcom.com

Web: www.socketcom.com

Three CF Serial I/O Cards

CF Serial I/O Card — A CompactFlash form factor serial port adapter. Connect standard RS-232 serial devices such as external modems, GPS receivers, bar code scanners and label printers to Palm PCs using the ultra-low power, Battery Friendly(tm) CF Serial I/O card.

Available: March 1998

Price: \$169

CF Ruggedized Serial I/O Card — A ruggedized version of the ultra-low power CF Serial I/O Card, especially designed for use in harsh, industrial environments.

Available: March 1998

Price: \$189

CF Dual Serial I/O Card — Add two high-speed RS-232 serial ports to your Palm PC. The ports operate simultaneously and independently of each other while consuming only 21 mA, extending the battery life of the Palm PC.

Available: June 1998

Price: \$249

Socket Communications, Inc.

Phone: 800-552-3300 / 510-744-2700; Fax: 510-744-2727

Email: serial@socketcom.com

Web: www.socketcom.com

CF Low Power Ethernet Card

The CF Low Power Ethernet Card (CF/LP-E) plugs into a Palm PC, providing a fast, location-independent way to synchronize with a desktop PC, share networked files and browse the office intranet or the worldwide web. The CF/LP-E connects to a Windows

network via 10BASE-T twisted pair cable and transfers data at the rate of 10 megabits per second - 500 times faster than a serial port. The Battery Friendly(tm) CF/LP-E consumes minimal power, extending the battery life of its host Palm PC.

Available: June 1998

Price: \$179

Socket Communications, Inc.

Phone: 800-552-3300 / 510-744-2700; Fax: 510-744-2727

Email: serial@socketcom.com

Web: www.socketcom.com

CF Ethernet/Serial I/O Card

Add Ethernet connectivity AND a high-speed serial port simultaneously to your Palm PC with one CompactFlash card. Provides a fast (10 megabits per second), location-independent way to synchronize with a desktop PC, share networked files and browse the office intranet or the worldwide web. This Battery Friendly(tm) CF card also offers an independent high-speed serial port which connects to RS-232 serial devices such as external modems, bar code scanners, monitoring and control systems, data collection and lab equipment, label printers, GPS receivers and more.

Available: June 1998

Price: \$279

Socket Communications, Inc.

Phone: 800-552-3300 / 510-744-2700; Fax: 510-744-2727

Email: serial@socketcom.com

Web: www.socketcom.com

One Touch for Palm PC

One Touch for Palm PC provides the software and connectivity cable necessary to integrate the Windows CE-based Palm PC with existing AccessLink two-way pagers from Glenayre's Wireless Access Group. The two-way paging service is provided by SkyTel. The system's user-friendly interface facilitates email, numeric or alphanumeric paging and group paging — all via wireless transmission directly from the user's pager and a Windows CE-Based Palm PC. This solution requires no telephone, no dial-up, and no operators, and is supported in any city nationwide in which SkyTel's SkyWriter service is available.

The One Touch for Palm PC solution offers numerous features such as: send messages to one-way pagers; send/receive messages are facilitated with two-way pagers; message lengths are as long as carrier allows; reply, forward, resend and custom message functions are available to any one-way/two-way pager or email address; and, multiple pager numbers and/or email addresses can be selected for group page or email delivery.

Available: April 1998

Price: \$69.95 (software and cable)
JP Systems Attn: Dayakar Puskoor
Phone 972-484-5432; Fax 972-484-4154
Email: dayakar@jpsystems.com
Web: www.jpsystems.com

Ricochet SX Modem and Wireless System

Metricom announced that its wireless packet radio network and modem will work with the Palm PC. The Ricochet network serves the greater San Francisco Bay area, Seattle, Washington, D.C. and several university and corporate campuses in the USA. Their Ricochet SX wireless modem is a thin external battery powered modem.

Price: \$379 for Ricochet SX Wireless Modem
Price: \$29.95/mo. for wireless service
Metricom
Phone: 408-399-8200 / 408-354-5038
Web: www.ricochet.net

Navigation

TeleType GPS System

TeleType GPS announced plans to support the Microsoft Palm PC and Auto PC platforms with the latest TeleType GPS software to provide worldwide street level navigation with global positioning system (GPS) technology. The TeleType GPS product imports maps from Internet sites and allows users to import their own scanned maps while still providing a GPS plug in.

Availability: to be announced
TeleType GPS
Phone: 888-TELETYPE / 617-734-9700
Web: www.teletype.com/gps

Developers

ES2110 Single-Board Computer

The ES2110 single-board computer is a Palm PC offered in a compact 3" by 4" form factor to OEM developers. Eclipse delivers the ES2110 as a fully verified single-board computer with all of the necessary device drivers and pre-compiled OEM Adaption Layer (OAL). Eclipse's single-board computer with the Hitachi SH7709 provides a compact, feature rich, low power solution for OEMs who want to create Palm PC and Handheld PC devices with unique attributes.

Available: Immediately
Price: Under \$500 in OEM quantities

Evaluation System for Windows CE

The Eclipse Pathfinder evaluation system provides OEMs and ISVs with a development platform to create software applications for Palm PC and Handheld PC products, using standard languages such as Visual Basic and Visual C++. The Pathfinder system also helps speed the development of hardware and makes rapid prototyping of Windows CE-based system a reality. The Pathfinder system is comprised of Eclipse's ES2110 single-board computer plus a second board that includes a power supply and connections for testing numerous I/O functions. The entire kit is packaged for convenient engineering debug.

Price: \$4995.00
Available: Immediately
Eclipse International
Phone: 415-691-6416
Web: www.eclipseint.com

Software

Communications

bFAX Express for the Palm PC

bFAX Express is a send-only fax utility for the Palm PC. bsquare has optimized its bFAX utility for the Palm PC, adding pop-up menus and a "soft input" panel. bFAX integrates with Contacts database, letting you create faxes, quickly select fax numbers and send your fax. You can also adjust fonts on margins on the fax and automatically add a cover page. You must have a Palm PC equipped with a fax/modem and be connected to a telephone line.

Available: 1st Quarter 1998
Price: \$30
bsquare development
Phone: 888-820-4500 or 206-519-5941
Fax: 206-519-5941
Email: bfax@bsquare.com
Web: www.bsquare.com

Infowave Office Enabler

Users of Palm PCs equipped with wireless modems (as well as users of similarly equipped Windows CE, Windows 95 or Windows NT devices), can have full two-way wireless communication with their companies Microsoft Exchange server. Users connect via familiar Pocket Outlook, Outlook or Exchange clients. Infowave Office Enabler lets wireless users connect to the same mailbox and have the same e-mail

address as they do when they are in the office. With the Infowave Office Enabler server, a corporation can have several to thousands of mobile users accessing their corporate information resources.

The Infowave Office Enabler lets mobile workers avoid more expensive dial-in and cellular data connectivity options.

Pricing: \$140/client (approx.)
Availability: Immediately
Infowave Wireless Messaging
Phone: 800-INFOWAV 800-463-6923 / 604-473-3600
Fax: 604-473-3799
Email: wireless@infowave.net
Web: www.infowave.net

WyndPower

WyndPower is designed for corporate environments with 25+ users and has been designed specifically to meet the compatibility, security, and flexibility needs of corporate customers. WyndPower enables users of Windows CE 2.0 devices, including the Palm PC and H/PC to communicate via e-mail, browse the web, and access the corporate Intranet using a variety of wireless and wired connection options.

Available now
Pricing: Service plans as low as \$9.95 monthly service, Software priced separately depending on configuration.
Wynd Communications
Phone: 805-781-7000; Fax: 805-781-6001
Web: www.wynd.com

WyndMail

WyndMail provides wireless e-mail, faxing, paging, text-to-speech and speech-to-text messages on a variety of handheld platforms, including Windows CE. It's easy to switch between platforms simply by moving the wireless PC card modem between devices. WyndMail users can also access web pages via WyndMail's WebValet service and have immediate or scheduled access to stock quotes via Wynd's QuoteValet service.

Available now
Pricing: from \$19.95/month, including service and software.
Wynd Communications
Phone: 805-781-7000; Fax: 805-781-6001
Web: www.wynd.com

ZAP-IT

Users of ZAP-IT Wireless Inbox can connect their Palm PC to their existing e-mail mailbox to send and receive e-mail, faxes, phone messages and pages. The free message preview option helps control costs. Additional ZAP-IT features include a personal 800 number for receiving fax and phone messages, a customizable fax profile for attachments and letterhead, and the ability

ty to access Internet and intranet web pages.

Pricing: Individual subscribers can choose from two monthly and three annual plans, including a basic monthly plan for \$9.95. Companies interested in wirelessly enabling their mobile workforce to provide wireless access to existing desktop e-mail can do so for a one-time setup fee of \$500-\$1,000 in addition to activation and subscription charges.

Available 2nd Quarter 1998

DTS Wireless

Fax: 732-602-0990

Email: info@dts.net

Web: www.dtswireless.com

nizing all handwriting styles — cursive, print or mixed. CalliGrapher employs advanced fuzzy logic and neural net techniques and recognizes arbitrary symbol strings as well as words from its integrated dictionary.

CalliGrapher operates seamlessly in the background, recognizing and spell checking within Windows CE documents or forms that use standard data formats. CalliGrapher Version 5.0 now lets you draw sketches or jot notes on the screen and save them in compressed format.

CalliGrapher 5.0 requires 550-900 Kb file storage space, depending on selected components.

Price: \$49.95
(Free 15 day trial version)
Available Now

Calculators/Finance

bTRACK for Palm PC

Keep track of time, expenses and mileage on your Palm PC. Optimized for Palm PC screen and includes categories for entries, currency conversion, start/stop watch. Track credit card expenses. Reminds you as you approach your per-diem allowance. Integrates with desktop reporting programs.

Available 1st Quarter 1998

Price \$60

bsquare development

Phone: 888-820-4500 or 206-519-5941

Fax: 206-519-5941

Email: bfax@bsquare.com

Web: www.bsquare.com

eWallet

eWallet lets you keep all your important information with you in a format that's secure, easy to access, centralized and portable. Easy-to-use forms help you store credit cards, calling cards, bank account information, membership numbers, identification information, passwords, PIN numbers and more. eWallet is encrypted and password-protected, and you can back up all your information for safekeeping.

Available June 1998

Price: \$29.95

Ilium Software

Phone: 888-632-5388 / 734-973-9388

Fax: 734-973-2640

Email: info@iliumsoft.com

Web: www.iliumsoft.com

Handwriting recognition

CalliGrapher 5.0

CalliGrapher 5.0 lets you write directly on the screen of your Windows CE 2.0 Palm PC or Handheld PC. CalliGrapher accurately transforms your script into text, recognizing characters, words, and full sentences, recog-

ParaGraph PI Technology, a Silicon Graphics Company

Phone: 650-933 3000

Fax: 408-374 5466

Email: info@paragraph.com

Web: www.paragraph.com

Jot upgrade

Jot software built into the Palm PC and providing users with handwriting recognition capabilities and a soft keyboard in the bottom quarter of the screen. CIC will offer users an upgrade of Jot that will provide handwriting recognition or soft keyboard on the entire Palm PC screen. The upgrade will also include a trainer and macro editor. The trainer will let users enable or disable various character options. The macro editor lets users assign up to 1,024 characters to

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a gesture and recall the string whenever the pre-defined gesture is written.

Available in the Spring of 1998.

Price: \$24

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Email: sales@cic.com

Web: www.cic.com

Software Development

JetForm Design 5.1

JetForm Filler for Windows CE

JetForm Filler on the Microsoft Windows enables corporations to rapidly build "electronic forms" with embedded business intelligence and to deploy them widely throughout the organization. Electronic forms created with JetForm Design 5.1 can be quickly compiled to run on Palmtop PCs. A single version of JetForm Design will support forms for both desktop and Palmtop PC deployment. The compiled form is stored on the network where Filler for Windows CE users can access it. When away from the office, Palmtop PC users can perform data capture and then download the data from the Palmtop PC. Users can simply connect to the JetForm Handheld Connect software on the network and upload completed form files to the server for processing with JetForm Filler or JetForm Central Pro.

Available now

Price: JetForm Filler for Microsoft Windows CE \$149

JetForm Design 5.1 \$495

Joey Technologies, Inc.

Phone: 813-822-5639; Fax: 813-823-0436

Email: joey@joeytech.com

Web: www.joeytech.com

Rainbow

Intrinsyc Rainbow is the world's first web server software for Microsoft's Windows CE operating system. Rainbow's web technology enables developers of Windows CE-based embedded systems to build in a communications gateway utilizing standard HTTP technology. Just as the web browser has proved essential for information exchange from the Internet on the desktop, web server technology is essential to leverage the Internet for remote communication with an embedded system. Rainbow customers have the ability to remotely monitor, configure, control, and update their Windows CE-based devices using a standard web browser.

Intrinsyc Rainbow simplifies the development of Web-enabled embedded devices by providing a robust server component for Windows CE. Rainbow features include:

built-in ethernet support; user authentication, that enables Windows CE systems connected to the Internet to include password protected, non-public areas on the device; and Binary Gateway Interface (BGI) technology, allowing OEMs and end users to create extensions to customize the web server.

Available now.

Pricing: call

Intrinsyc Software

Phone: 425-739-2009

Fax: 425-828-2142

Email: info@intrinsyc.com

Web: www.intrinsyc.com

RIO Wizard for Windows CE 2.0

RIO Wizard for Windows CE 2.0 is a rapid application development tool that adds on to the Microsoft Windows CE Toolkit for Visual C++ version 5.0. Using intuitive wizards and an easy-to-use visual builder, RIO Wizard lets a Visual C++ programmer promptly create mobile database applications complete with graphical user interfaces (GUI) for the Palm PC or Handheld PC (H/PC).

RIO Wizard provides a Visual C++ programmer an easy-to-use development environment that rivals Visual Basic. According to the company, the applications that are produced are by far more suitable for deployment to the small-computing devices in terms of size and performance.

RIO Wizard automates many Microsoft Foundation Classes programming details. The product comes with TechBridge's MFC class library extension — RRecordset, which adheres to the interfaces of Microsoft's MFC CRecordset class for the desktop.

Available April 1998

Price: N.A.

TechBridge Technology Corp.

Phone: 905-513-7800

Fax: 905-513-1330

Email: sales@tbridge.com

Web: www.tbridge.com

Visual CE for the Palm PC

Offers users the ability to drag and drop controls to create their own custom electronic data display and entry forms that run and stand alone on the Palm PC. Additional features include automatic synchronization to desktop ODBC enabled databases like Microsoft Access, multiple page capabilities and multiple sort fields. Visual CE based forms can incorporate seven common controls: labels, edit boxes, note boxes, check boxes, radio buttons, tab buttons, and drop down lists. Simple calculations are also supported. Each control is bound to a database field. Controls can be sized, dragged and positioned as necessary using the desktop WYSIWYG development environment. The built-in calendar and numeric keypad greatly

facilitate data entry. Visual CE runs on Windows 95 or Windows NT. The forms run on any Windows CE-based H/PC or new Palm PC and have an extremely small footprint. Please call for pricing. Dealer inquiries welcome.

Available March 1998

Price: \$129

SYWARE, Inc.

Phone: 617-497-1300

Fax: 617-497-8729

Email: frank@syware.com

Web: www.syware.com

Synchronization

Randsoft Harmony 2.0

Randsoft Harmony synchronizes your Windows CE 2.0 based PalmPCs or H/PC with Organizer 97 GS, Lotus Notes 4.5, ACT! 3.0, ECCO Pro, GroupWise, Outlook (Exchange folders), GoldMine and other programs running on your PC. Harmony 2.0 uses Randsoft's Rapid Transfer technology, which can, according to the company, synchronize twice as fast as competing products. With Harmony's Corporate Customization Toolkit you can customize Randsoft to synchronize any ODBC PC/Server database with any database in your H/PC. Supports multiple users and H/PCs.

Available currently.

Price: \$39.95 (single user)

Rand Software Corporation

Phone: 888-RANDSOFT(726 3763) / 802-362-0663

Fax: 802-362 6052

Email: info@randsoft.com

Web: www.randsoft.com

Translation

Small Talk

Small Talk is a two-way, real-time translator for the Palm PC. Small Talk presents you with complete sentences intuitively organized into situation-based categories and allows you to communicate in a foreign language. These items will be available late Spring 1998.

Prices: Small Talk English/Spanish \$78.99

Small Talk English/French \$78.99

Small Talk English/German \$78.99

Small Talk English/Italian \$78.99

Small Talk Deluxe (all languages) \$99.99

Concept Kitchen

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Fax: 415-252-3323

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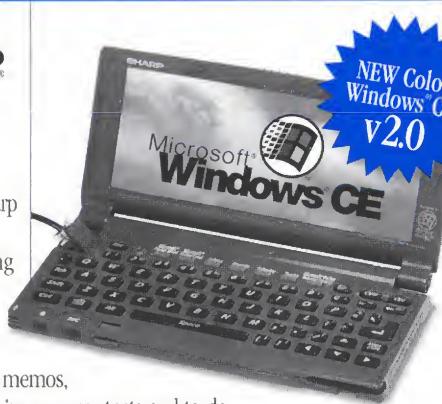
Mobilon 4500

Introducing the new Sharp Mobilon H/PC – with Microsoft CE 2.0 operating system, a wide-screen display, 16MB RAM, PC Card slot, built-in 33.6 modem and more. Write memos, build spreadsheets, organize your contacts and to-do lists – then quickly sync the information with your desktop.

Mobilon HC-4500 (color display), 16MB RAM, rechargeable battery pack, AC Adapter, PC link cable Our Price:\$899⁹⁵

Mobilon HC-4100 (grayscale display), 8MB RAM, PC link cable:\$629⁹⁵

Sharp Color Digital Camera:.....\$399⁹⁵

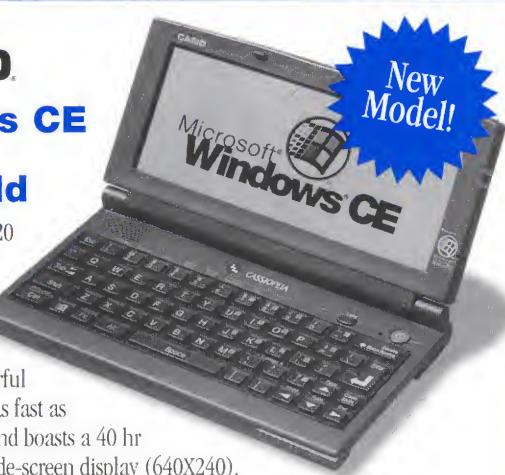


CASIO

Windows CE v2.0 Handheld

The Cassiopeia A-20 utilizes the long-awaited Windows CE 2.0 operating system. This powerful new unit is twice as fast as previous models and boasts a 40 hr battery life and wide-screen display (640X240). Features PC Card slot, 8MB RAM. *Includes over 30 CE software titles!*

Cassiopeia A-20 8MB Handheld PC & PC Link Cable Our Price:\$589⁹⁵



PHILIPS

Velo 1

Philips brings communications, upgradeability and style together in the Velo 1. Utilizing Microsoft's popular Windows CE operating system, the Velo 1 allows you to easily create documents and spreadsheets using Pocket Word and Pocket Excel, or surf the Internet using Pocket Internet Explorer.

- Built-in 19.2 fax/modem
- Convenient application buttons
- Voice memo recorder

SPECIAL - 12MB CE 2.0

Velo 1 12MB, Velo dock, AC adapter & rechargeable battery pack Our Price:\$499⁹⁵



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HP 620LX

Windows CE 2.0 Color Palmtop PC

The new HP 620LX Palmtop PC features vibrant, full color on a wide, 640x240-backlit screen for unmatched readability. It packs 16MB of RAM, industry-standard CompactFlash and PC Card slots, a serial and infrared port for direct printing, built-in microphone for instant audio recording, and a Lithium-Ion rechargeable battery pack that will keep you working while on the road.

HP 620LX Color Palmtop PC with Docking Cradle, AC Adapter & Cable Our Price: \$869⁹⁵



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Simple Flash 33.6 Modem Bundle

The two most important CE accessories you can get for your H/PC – a 33.6 Data/Fax cellular modem & an 8MB Flash storage card for one low price!

8MB Flash & 33.6 Cellular Modem Our Price:\$229⁹⁵

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Auto PC

Windows CE in your Dashboard... Hands Free Interaction with Your Car!



Microsoft also announced Auto PC 1.0, an expandable dashboard computer running Windows CE 2.0. Auto PC will provide mobile users with easy and safe access to information and entertainment allowing users to keep their eyes on the road and their hands on the wheel. Forget a keyboard or touch-sensitive screen. Auto PC's user interface is speech based — the driver talks to Auto PC and Auto PC talks back.

Auto PC fits in the same dashboard slot as an auto AM/FM radio or cassette player. Version 1.0 of the device will have 8 MB of RAM and 8 MB of ROM. The faceplate screen is a backlit 256 x 64 pixel monochrome display. As mentioned, Auto PC interfaces with the driver via a built-in microphone and talks back through car speakers connected to the device. Auto PC communicates with Palm PCs, H/PCs, and other devices via a built-in IrDA port and Compact Flash slot. Since the Auto PC replaces a car AM/FM stereo, it will also have a built-in AM/FM tuner and CD ROM player.

A "test drive"

The folks at Microsoft were kind enough to show me the Auto PC at the Consumer Electronics Show. The hardware did look

very much like the AM/FM stereo I have in my car, except that it had a backlit screen in the middle of the faceplate (see photo above). There were navigation buttons on the faceplate, allowing the user to select options, but with the voice interface, I don't think the driver will be using the buttons much (except, perhaps, while parked).

I put Auto PC through its paces. The first thing I wanted to do was, of course, turn on the radio and listen to some music. They showed me how to activate the voice interface. With a few very simple commands I asked Auto PC to turn on the radio, go to a specific FM station frequency. The volume was too low so I asked Auto PC to turn it up, then down, changed stations a few times, and was generally impressed that Auto PC didn't make any mistakes. The speech technology in Auto PC 1.0 will focus on command and control of the device (i.e., start the FM tuner, go to contacts, etc.). You will be able to train Auto PC to recognize your voice. Subsequent versions of the Auto PC will have dictation capability and a more conversational interface.

Most auto car AM/FM stereos have buttons you can program to go to your favorite station. While you're driving, all you do is press the button (instead of fiddling with the tuner). Auto PC has a similar feature using a

voice command (like a "voice macro"). I programmed Auto PC to recognize the call letters of a station (i.e., "KRNA") as a request to turn on the radio, go to that station, and turn the volume up real loud! This feature can be used with any of the Auto PCs functions (AM/FM tuner, CD player, address book, etc.).

Next, they showed me how to look up an address. Again, very simple voice commands take you to the Auto PC version of the Contacts application. Speak out the name of the person and contact information, including phone number and street address are displayed. Auto PC will come with options that allow you to display the desired address on a map of the area, to help you find the address. Vehicles can even be equipped with Global Positions Satellite systems to display the vehicles position on a displayed map.

Auto PC comes with a CD ROM player in addition to the AM/FM tuner. Once you place the audio CD in the player, you can access its features via voice commands (turn it up, down, go to different tracks on the CD, etc.).

The Auto PC comes with a Compact Flash slot that lets you add memory, wireless modems, and other Compact Flash devices. Microsoft was demonstrating the Auto PC fea-

Continued p. 23

Auto PCs — the Beginning

Clarion Auto PC

Clarion was the only independent manufacturer announcing delivery of the Auto PC in the near future. Clarion will be shipping its Auto PC in limited quantities in May and in mass quantities in July. The standard Clarion Auto PC slips into the dashboard slot normally occupied by an AM/FM radio (1 DIN form factor). It will cost approximately \$1,300.

The Clarion Auto PC will come with a four-channel AM/FM stereo with 35 watts per channel, 4 pre-amp outputs; 10-band equalizer, balance/fade controls and bass & treble controls. It will also have a built-in CD/CD-ROM player; IrDA infrared data port and a Type II CompactFlash card slot. It has a digital sound processor; serial port (for an optional GPS receiver); 8 MB RAM & 8 MB ROM; and an 8-color 256x64x3 color LCD display. The Clarion Auto PC comes with a removable face plate.

The Clarion Auto PC has a microphone built in for voice activated control with a 200+ vocabulary and voice memo capability. The built-in software includes an address book, highway navigation system including maps, and vehicle mileage log. The text-to-speech capability lets the Auto PC talk to you. For example, you can look up a contact and have the Auto PC verbally tell you the street address. If you have optional wireless messaging capability, you can have the Auto PC read you your incoming messages.

Clarion's Auto PC PLUS Package will include, in addition to the above, an 8 MB CompactFlash memory card, the InfoGation Auto PC File Manager, and the Clarion GPS Receiver. Clarion will offer the following options: Clarion USB 6 CD/CD-ROM Auto Changer; UNGO USB Vehicle Security System; Cellular Telephone/Modem USB Interface; FM Side-band Wireless Receiver & Services; "ASSIST" services; and Vehicle diagnostic / monitoring interface.

I had a good look at the Clarion system at the January Consumer Electronics Show. Microsoft uses it to demonstrate Auto PC. Voice command recognition works well inside the demo vehicles. It was easy to "squirt" contact information from a Handheld PC to the Auto PC using the com-

mon infrared interfaces. I'll do a more complete review of Auto PC as soon as possible.

For more information, contact your Clarion dealer or Clarion Sales Corporation; Phone: 310-327-1999; Fax: 310-327-1999; Web: www.autopc.com or www.clarionmultimedia.com

Other Auto PC developers

A number of other manufacturers are developing Auto PCs, but don't plan on any near-term releases. Samsung was showing a prototype of its Auto PC, the SAP-100 "In-Vehicle Entertainment & Information System." Other manufacturers planning Auto PCs include Visteon, Alpine of Japan, Harmon Kardon; and United Technologies Automotive (UTA).

When will we see an Auto PC offered as an option on new cars? The hardware and software will be available this year. It

depends on how long it takes automobile manufacturers to get on board. Eventually Auto PCs will be offered as options by auto manufacturers. Nissan showed off its I30 Executive Luxury Special Edition concept car (with Auto PC) at CES. Word has it that PSA/Citroen is considering an Auto PC option in the near future. Visteon was formerly a division of Ford Motor Company. Since Visteon is developing an Auto PC, it's probably safe to assume that Ford will offer the Auto PC as an option sometime in the future. With an introductory price tag of over \$1,000, expect to see Auto PCs in luxury cars first. As it's accepted, the price will come down and the number of installed Auto PCs will increase.

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Auto PC Products

Listed here are some of the new products for Microsoft's new Auto PC platform. Information was scarce as we went to press, but we'll fill in the gaps in the May/June 98 issue. Prices listed are suggested retail price. Listings do not represent an endorsement by Handheld PC Magazine.

Hardware

AutoConnect Vehicle Interface Module Kit

The AutoConnect Module interfaces the Auto PC to your car's on-board computers and other electrical signals. This opens up the Auto PC to a wide range of applications which help you to monitor and control your vehicle's operation. The AutoConnect Module comes with Vehicle Health and Maintenance Log software that will help to ensure that your vehicle is operating properly and will stay in good condition. The AutoConnect Module also lets you lock and unlock your car's doors by voice command, and enables the Auto PC to display other interesting data such as inside and outside air temperature. Additional applications such as Trip Computer and Gauge Package can be purchased separately. And more applications will soon be available! The AutoConnect Module is easy to install. It has a minimal number of connections since it gets a wide range of data from a simple interface to your car's on-board computer bus. And it connects to the Auto PC using the plug-and-play Universal Serial Bus (USB).

The AutoConnect Vehicle Interface Module Kit includes: AutoConnect Interface Hardware Module, Vehicle Health Monitor Software Application, Vehicle Maintenance Log Software Application, Door Lock Control Software Application, Auto PC Software Drivers, Auto PC Vehicle Configuration Database.

*Availability: June 1998
Price: \$199.00 (retail)
Vetronix Corporation
Phone: 805-966-2000; Fax: 805-965-3497
Email: dbreuer@vetronix.com (Program Manager)
wlasak@vetronix.com (Program Manager)
Web: www.vetronix.com*

AutoFM Auto PC Control Module and CUE MessageCenter services

AutoFM enables wireless messaging reception to the Auto PC. The AutoFM receiver connects to the Auto PC via its RS 232 serial interface and lets the Auto PC receive wireless messages from CUE MessageCenter services.

CUE's nationwide network reaches 85% of the North American population and covers 80% of the interstate highway system. MessageCenter services include: Message Service (200 alerts or numeric pages); Text Service (100 alerts and 100 text messages or email messages with the maximum length of 100 characters); and TrafficAlert (real-time traffic alerts in the U.S.); EmergencyAlert service can be used for emergency applications such as remote door locking and unlocking.

*Available 2nd Quarter 1998
Message Service: \$125 per year
TrafficAlert: \$60 per year
Text Service: \$240 per year
Emergency Alert service: \$30 per year
CUE Nationwide Corporation
Phone: 800-858-8828
Email: swilkerson@Q.net
Web: www.Q.net*

Software

InfoGation Auto PC Products

InfoGation Corporation is a leading independent software developer and system integrator for the Microsoft Auto PC platform. They have introduced the following suite of communications, information, navigation and safety enhancement software products for the new Microsoft Auto PC platform. Initially these applications will be made available to OEM developers.

InfoGation Odyssey — utilizes data from geographic databases and a GPS device to display maps, give turn-by-turn directions, pinpoint car location, and calculate routes.

InfoGation InfoFlash — allows the driver to subscribe to a set of personalized real-time information and news services including traffic, news, and weather reports through wireless push technology.

InfoGation PhoneBase — provides many enhancements to cell phones through a phone cradle. Functions include auto answer, callback, speed and sequential dialing. Users can enter, edit, search and preset numbers in a mini-database. Phone numbers can be exchanged between Auto PC and the cell phone, PC or handheld PC, and the on-board contact database.

InfoGation Assist — connects the driver with a national service provider to summon emergency, roadside and information assistance. Other services include remote car lock/unlock, remote car finder, and stolen vehicle recovery.

InfoGation Voice Memo — is a simple digital recording application which allows users to record voice reminders, messages, phone calls and radio clips and have them

played back at a specified time if desired. The recordings can be transferred to a PC.

InfoGation File Manager — performs many of the functions familiar to PC users, e.g. copy, paste, delete, and find files and applications. This utility accepts simple voice commands to launch and navigate between applications.

InfoGation expects their strategic partner, Clarion Company, Ltd. of Japan, a leading car audio and electronics vendor, to offer these products as embedded functionality or options in the new Clarion Auto PC planned for release in the spring of 1998. InfoGation is currently partnering with CUE Network Corporation to provide wireless messaging of E-mail, text, and traffic reports over CUE's FM subcarrier network. InfoGation is also working with ORA Electronics to provide a hands-free cell phone solution connected via the Universal Serial Bus (USB) to the Auto PC platform. Some of the products will come with hardware.

*Available in April
Pricing: OEM licensing fees under review.
InfoGation also expects to provide consumers with fee-based upgrades from manufacturer installed 'lite' versions.
InfoGation Corporation
Phone: 619-535-9870; Fax: 619-535-9871
Email: kpu@infogation.com or lrmeans@infogation.com
Web: www.infogation.com*

NavTech Database

The NavTech Database offers an extensive and precise digital representation of the road network that provides the depth, accuracy and coverage needed to enable turn-by-turn, door-to-door guidance. The database includes a highly accurate representation of the road network and detailed information on primary and alternate street names, address ranges, and driving rules (including one-way and turn restrictions). In addition, the database contains hundreds of thousands of Points of Interest information in more than 40 categories, including restaurants, petrol/gas stations, police stations and hospitals.

NavTech Distribution offers a range of services designed to provide efficient, cost-effective delivery of map database CDs to navigation system buyers. NavTech's full-service fulfillment operation supports product and system manufacturers, dealers and end users.

*NavTech North America
Phone: 408-617-5000; Fax: 408-737-3280.
Europe: Phone: +31 (0) 499 331414; Fax: +31 (0) 499 331410.
Japan: Phone: +81-45-476-3704; Fax: +81-45-476-3705.
Web: www.navtech.com*

Auto PC *continued from p. 20*

tures with the Clarion Auto PC (see photo on page 20). The Compact Flash slot on this device is located to the right of the number pad. Next, Microsoft showed me the Auto PC's IrDA infrared port. They pointed the infrared port of an HP 620LX Handheld PC at the Auto PC and "squirted" contact information for the H/PC Contact application to the Auto PC Address Book. It took about 5 seconds to transfer 3 items. They also demonstrated the turn-by-turn navigation system and the Auto PC's email capabilities. They did not show me the optional GPS capabilities (we were inside the convention center) or the diagnostics capability.

A Standard for In-Car Computing

Microsoft hopes that Auto PC will become the standard for in-car computing, entertainment, and data communication. However, there is some competition.

Microsoft believes that Auto PC will be attractive to automobile manufacturers and developers of in-car computers. Developing applications for Windows CE (in the H/PC, Palm PC, Auto PC or other systems) requires the same programming languages and skills as developing for Windows 95/98 and Windows NT. There are a large number of skilled developers already available (over one million, according to Microsoft). In addition, Windows CE is already in its second version and Microsoft shows every sign of strongly supporting it and continuing to develop its capabilities. For these and other reasons Microsoft feels that Auto PC will provide an easier and less-expensive approach to the development of car computer solutions.

Auto PCs will be marketed to mobile business professionals and luxury car owners, and sold to existing car owners, or offered as an option to new car buyers. According to Microsoft, the price per unit for individual buyers will be in the \$1,000 range. (So far, Clarion is the only manufacturer to announce a shipping date for the Auto PC. Clarion's unit will be available in May in limited quantities. It will be priced under \$1,300.) In addition, Microsoft feels that Auto PC will be popular with fleet operators with vertical market applications (i.e., companies with mobile sales, service, and delivery forces), audiophiles and new technology early adopters.

Keep Your Eyes On the Road!

6 Peeks at how Windows CE 2.0 will look on your dashboard...



Auto PC's main screen displays the options you have to choose from. The CD player is selected in this screen.



Auto PC's CD Disc Player lets you select the track you wish to listen to. If there are songs on a CD that you do not wish to listen to, you can deselect them and Auto PC will skip over them whenever you play the CD. You can, of course, reselect them at a future time.



Auto PC lets you specify presets to adjust the treble, base, and volume of your AM/FM radio and CD player.



The AM/FM radio displays the station you are listening to. You can use voice commands or buttons on the faceplate to change stations and adjust volume, treble and base.



Auto PC's Navigation function lets you set a starting point and destination. It then gives you turn-by-turn directions to your destination.

Quick Tips & Handheld PC Tricks

All tips from Tom Gibson, Technical Editor, Handheld PC Magazine, unless otherwise specified.

Make your H/PC unique

You can personalize your H/PC by renaming the "My Handheld PC" icon on the desktop. Highlight the icon, then tap the text once to rename. You might type in "Tom's HPC," or "My Casio," or "Jim-Bob." Press "Enter." Be creative, you can call it anything you want and it will still like you.

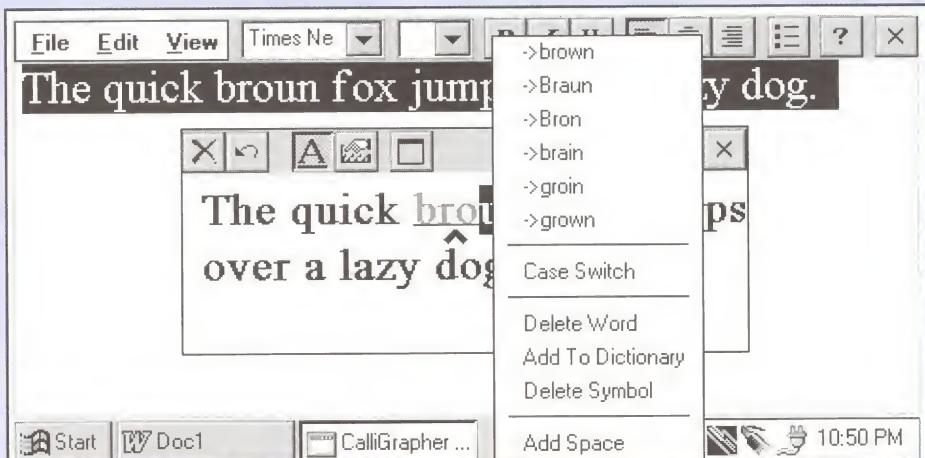
Improving Handwriting Recognition

One of the great things about Handheld PCs is the ability to add handwriting recognition to the unit through various add-on programs. Some of the handwriting recognition packages do things a little bit differently, i.e., some will recognize cursive writing and some will not, some are smaller while others are big, and some are fast while others are slow. The products available for the H/PC are as follows:

CalliGrapher — lets you use cursive, print, or mixed styles. The program does not require you to learn a new way of writing and includes a spell checker (see Screen 1). Contact ParaGraph International; Phone: 800-810-0055; Web: www.paragraph.com.

Jot — combines a natural character set with a patented user interface. It supports both U.S. and Western European characters. Jot is built into the new Palm PCs. Jot also comes with a "soft keyboard" displayed on the screen, letting you tap on keys to enter characters. Contact: Communications Intelligence Corporation; Phone: 800-888-8242; Email: sales@cic.com; Web: www.cic.com.

SmARTwriter CE PLUS — provides handwriting recognition on the H/PC (see Screen 3, next page). The package comes with a drawing program and an



Screen 1: CalliGrapher built-in spell checker lets you correct mistakes quickly.



Screen 2: Jot's Mode Mark guides your writing for upper or lower case letters. Write numbers above the "line." Uppercase letters cross over the "line." Write lowercase below the "line".

"ink" notepad. Contact: Advanced Recognition Technologies; Phone: 818-678-3999; Email: sales@artcomp.com; Web: www.artcomp.com.

Find the handwriting recognition software that fits into your budget, available space and style and then get ready to practice, practice, practice.

Know what to do by the sound

The calendar application on your H/PC lets you know that you have an appointment by sounding an alarm, flashing the screen and flashing the light on the side of the case. While it is nice to know that you have an appointment, you still have to open the H/PC to see what it is. Here is a way to let your H/PC tell you what appointment you have without opening it up. Set up different alarm sounds for the different repeating events so that when the alarm goes off, you know exactly what it means without having to look (Screen 4).

Here's how to set up different alarm sounds.

Open Calendar and insert a new appointment. Tap on the General Tab and insert the name for your appointment. Make sure that the Remind Me check box is checked and tap on options. (Windows CE 2.0 users tap on the alarm icon to the right of the Reminder check box. Then tap on Reminder Options). Make sure that Sound is checked and tap on the scroll window and select an alarm sound. As you select a new alarm sound, the H/PC will preview the sound for you. Find the one you like and use it for that appointment. Select OK and OK again to get back to the appointment view. If you want to change the alarm sound on an existing appointment, double tap the appointment and follow the same procedure.

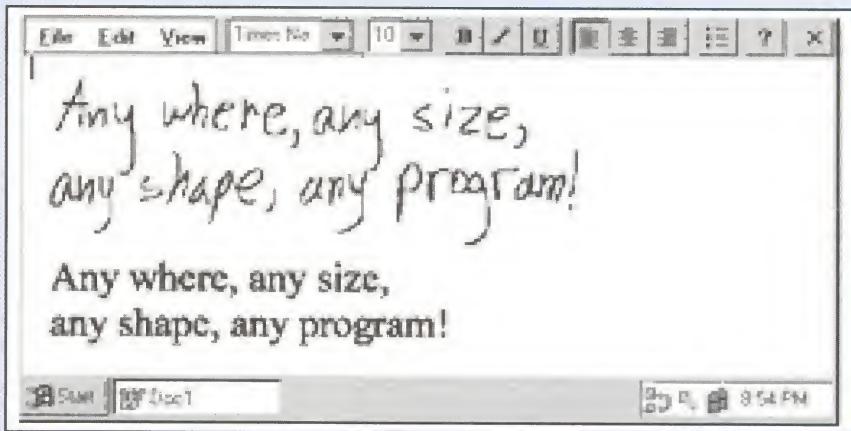
One thing you can do is always use the same sound for the same type of appointment. For example, Alarm 2 sounds like a phone ringing. I use that for appointments where I am supposed to call someone, or they are supposed to call me. I don't know who to call, but I always know that I have to make a call.

Experiment with different sounds, develop a system and then stick to it. When an alarm rings, you'll know what it's about without having to look.

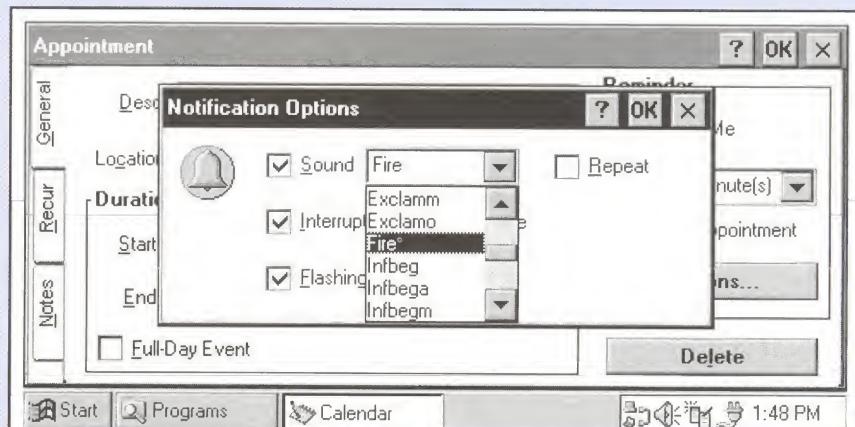
Templates save time, ensure consistent format

If you are like me, you use the same 2 or 3 document formats when you use Pocket Word and Excel. For example, I use Pocket Word mainly to write in-company memos, letters, and to take notes at meetings. I use Pocket Excel to track mileage and gas on trips, and keep lists of documents I'm working on for *Handheld PC Magazine*.

The format for each of these documents doesn't change much, so I created templates for each type of document. Whenever I want to write a memo, I call up the memo template, write the memo and save it under a different name.



Screen 3: SmARTwriter CE PLUS provides handwriting recognition on the H/PC.



Screen 4: From the individual Appointment screen of Calendar you can specify the alarm sound you want to associate with the appointment.

Whenever I go on a trip, I call up the mileage template, use it to track mileage-related expenses and save it under a new name. It saves a lot of time.

Pocket Word Templates

Pocket Word for Windows CE 2.0 comes with the ability to save a document as a template. Open Pocket Word and create the document format you want. Then select the Save As option in the File menu. The pull-down menu in the lower-right of the Save As dialog box list 4 options. Select Pocket Word Template, give the document a name you'll recognize later on (i.e., "Memo") and tap OK. Next time you want to write a memo, tap File, New, Document from Template and double tap on the Memo document. Write your memo and save it under a new name.

The first version of Pocket Word that came with the Windows CE 1.0 doesn't have the ability to save Pocket Word templates. In this case, create a new document that has everything you need in it and save it with a name that distinguishes it from

your other documents. For example, you might save your Memo template as TempMemo.doc. When you want to use that style of document, select File Open, select your templet and write your memo. When you are finished, save the document with a new name, keeping the original document clean for use again as a template.

Pocket Excel Templates

Pocket Excel that comes with the Windows CE 2.0 devices has the ability to save Pocket Excel templates. Create the workbook you want to use as a template then select File Save As... name your workbook and tap on the Type scroll bar in the lower right corner of the Save As window. Select Pocket Excel Template and tap OK. When you need to use the template, tap on File, New, Workbook from Template. Double tap on the template you need for the current workbook, add the new data and save it under a new name.

Pocket Excel that came with the Windows CE 1.0 doesn't have the ability to save Pocket Excel

templates. In this case, create a new workbook that has everything you need in it and save it with a name that distinguishes it. For example, you might save a mileage log template as TmpMile.PXL. When you want to use that style of workbook, select File, Open, and select TmpMile. Enter your mileage data and save the workbook under a new name, keeping the original workbook clean for use again as a template.

Make lists easily

I make a lot of lists. I have lists of what I need to get at the store, lists of stuff my children want for birthdays or Christmas, lists of what to take with me on trips, etc. With Pocket Word 1.0 that came with the Windows CE 1.0 devices, you had to manually number lists. However, list numbering is built into Pocket Word 2.0, so you can make lists quickly and easily. To enable list numbering, tap on Format, Paragraph, and select the Numbered radio button. Select the type of numbering you prefer from the pull-down menu (i.e., 1., 2., 3.; (1), (2), (3); etc.). Tap OK when you're finished. As you type in your list and hit ENTER at the end of each line, the next number is inserted for you.

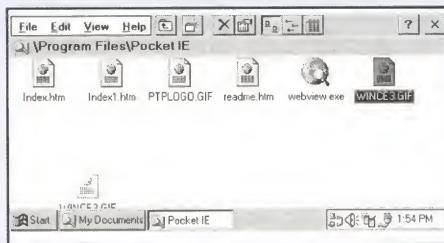
Make more file storage memory available

Memory is one of the precious commodities on your H/PC. Most of us are spoiled by the large hard drives we have in our desktop PCs, but we have very limited space available to us on our H/PCs and need to be careful using it. One way to save memory is to turn off the Recycle Bin. Alt+Tap the Recycle Bin, tap on Properties, and check "Do not move files to the Recycle Bin, remove immediately on delete". Beware of this solution. Files will no longer be sent to the Recycle Bin when you delete them, and instead will be permanently deleted. You will not be able to get them back. But you will free up the file storage space that would otherwise have been taken up by files in the Recycle Bin.. If you want to then change back to using the Recycle Bin, repeat the process and uncheck the "Do not move files..." box.

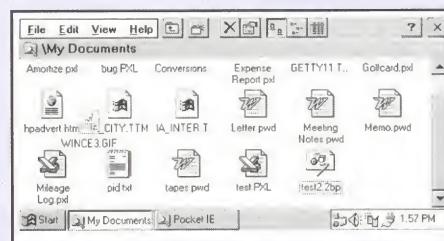
You can save a little bit more of the precious storage space available on your H/PC by deleting the Samples folder under My Documents. All the files are contained in ROM and stored in the \windows directory, so you can get them back later if you want to. To delete the folder, tap on Start Programs Windows Explorer and go to the My Documents folder. Highlight the Samples folder and hit Delete.

Easy way to move documents and other files

The whole purpose of having an H/PC is to stay organized. Occasionally, you may want to move things around. There is an easy way to move



Screen 5: An easy way to move a document is to open two Explore sessions. Press and hold down on the document you wish to move. The document icon will highlight as shown here.



Screen 6: Drag the file to the taskbar button representing the folder you want to move the file to. Hold the file there until the folder maximizes on the screen. Then drag the file onto the maximized screen and let up.

documents and other files between folders.

1. Tap Start, Explore, and go to the folder to which you want to move your file. Once there, tap on the My Documents button on the taskbar to minimize the screen.

2. Again, tap Start, Explore, to open another My Document screen. Go to the folder that has the file you wish to move.

3. With your stylus, press down on the icon of the file you wish to move (it should highlight) and keep pressing down (Screen 5). Keep pressing down, without letting up, until the very end of step 4 below)

4. Drag the file to the My Document button on the taskbar representing the folder you want to move the file to (Screen 6). Hold the file there until the folder maximizes on the screen. Then, drag the file onto the maximized screen and then let up. The file will appear on the screen.

Quick way to remove a file

To remove a program from your H/PC without using the Remove Program control panel, tap Run on the Start menu, or press Winkey+R, and then type the command "unload filename". For example, if you wanted to remove the program ABC, you would tap Start Run and type in "unload ABC".

Delete shortcuts to speed up your H/PC

Creating a shortcut puts an icon on the opening desktop screen, making it easy to open an application. But every time the desktop appears, the H/PC has to load all the icons on the screen. If you have a lot of shortcuts, it takes a long time to for the desktop to display. Deleting unused shortcuts will speed up the operation of your H/PC.

To delete a shortcut, hold the ALT key down while tapping the icon and select Delete. You can get them back at any time, but your screen will redraw faster with fewer shortcuts on the screen. To get a shortcut back, tap Start, Explore, and browse to the application or document you want the shortcut for and tap File, Desktop Shortcut or ALT-tap the icon, and then tap "Desktop Shortcut" on the Shortcut menu.

Do your on-line trading from a desktop PC

Internet security has become more prevalent recently, and many brokerage houses are offering on-line trading of securities. This would be a wonderful thing for a Handheld PC user, but it will not work at the present time. While Pocket Internet Explorer (PIE) has 40-bit security built into it, it is not the full-blown 128-bit security needed by these secure sites. 40-bit security is available worldwide, but, by law, 128 bit security is not exportable out of the USA.

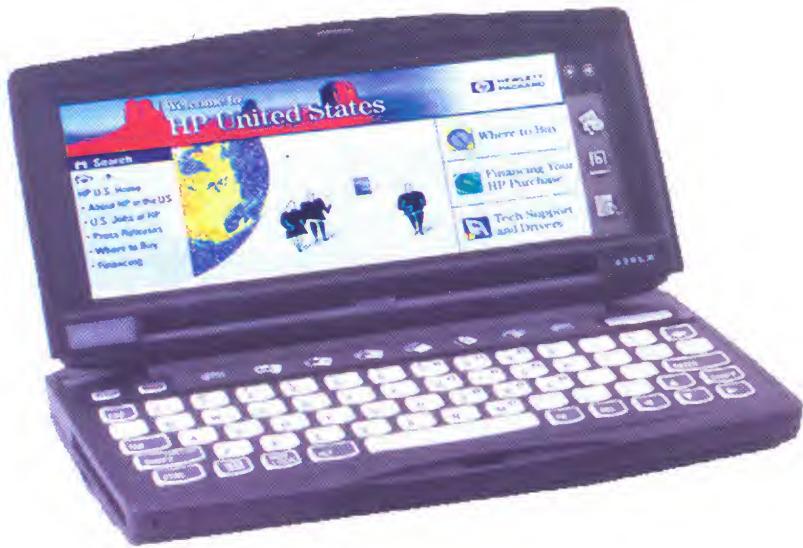
So for the time being, we will be forced to do our on-line trading via our desktop PC and not our H/PC

Change the folder that Pocket Word saves documents to

The default location for saving and opening files in Pocket Word is the My Documents folder. Every time you save a document, you can specify another location, but that takes time and there's no feature to change the default location.

A work around is to open Word, create a dummy document, and save it in the desired folder. Then minimize the document -- don't quit Pocket Word! (You can save it under the name 'dummy' so you can easily recognize it on the taskbar.) As long as you leave the dummy file on the taskbar, the new folder acts as the default. When you save a document, it saves it there. When you tap File, Open, it looks there. It's a bit clumsy but it works.

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Quick Look at the HP 620LX and Windows® CE 2.0

By Rich Hall

Managing Editor, Handheld PC Magazine

Editor's note: This is the first in-depth review of a Windows CE 2.0 H/PC we've published. We chose the Hewlett-Packard 620LX for a very good reason — they were the first company to send us a demo unit. As we get other H/PCs and Palm PCs in to demo, we'll let you know about them. We also accept reviews from independent sources, so send us your comments about the new Windows CE 2.0 PC companions.

First impressions last!

Perhaps it was the fact that that HP sent me the demo unit one week before Christmas — they wouldn't intentionally do that, would they? In any event, I got an early Christmas present today (well, I have to send it back after test driving it).

The HP 620LX Palmtop PC comes in a colorful, box that almost screams, "Buy me, I'm fun!". It has a substantial heft to it and those hard-to-open box tabs that ensure nothing falls out accidentally. It took a little while to figure out how to open the box, which just

increased my desire to get my hands on the new color-display H/PC.

The box contained seven items: The HP 620LX, a docking station, a PC connectivity cable, an AC adapter, a rechargeable battery, Microsoft Windows CE 2.0 documentation and CD ROM, and HP 620LX documentation and CD ROM. I pushed everything else aside except the 620LX.

The first thing I wanted to do was turn on the 620LX and play with it. Of course, I had to insert the battery pack. I did so, and connected the HP to its AC adapter, pressed the ON button and immediately got a message that the backup battery was low or missing. I frantically search the package for the coin-sized backup battery, but could not find it. I was just about to call HP when I decided to check the backup battery compartment. HP's PR department had thoughtfully installed the backup battery for the press review units. Unfortunately, by the time the unit got to me, the message indicated that it was already drained. I replaced it with a fresh CR 2032

coin cell (battery) and I was up and running. I don't imagine that off-the-shelf units will have their backup batteries preinstalled.

You'll notice I don't mention anything about looking for a quick start guide. The first thing I (and I believe most users) want to do is turn the thing on and play with it. This involves putting in the rechargeable battery pack, plugging the 620LX into the AC adapter, and pressing the ON button.

Additional programs included

I was not disappointed. The first thing I was greeted with was a crisp, readable color display, with a raft of application icons on the main screen.

The Windows CE regulars were there (Inbox, Calendar, Contacts, Tasks, Pocket Word, Pocket Excel, and the new Pocket PowerPoint. The 620LX had a number of additional programs on the desktop, all built into ROM and ready to go. I noticed bsquare Fax Professional, Microsoft Voice Recorder, Quicken ExpensAble, and Month-at-a-

Glance Plus. The first one I tried was Microsoft Voice Recorder. (Voice Record is not really an extra built-in application. It comes with all Windows CE 2.0 H/PCs.)

Voice Memo

A little history lesson is in order. Of the first batch of H/PCs, one of the more successful ones was the Philips Velo 1. One of the reasons for its success was its built-in voice memo recording capability, and everyone took notice! Windows CE 2.0 comes with Microsoft Voice Recorder (voice record and playback application) built in. All of the Windows CE 2.0 H/PCs (and Palm PCs) I've seen or read about come with a microphone and speaker to support voice memo recording capability. Anyway, I tapped on the icon to start voice record.

Without consulting the manual, I tried to record a memo. There are two buttons at the top of the Voice Recorder main screen, one with a black square in it, and one with a red circle. I assumed that the red circle was the image of a stop sign and was the "stop recording" button and the button with the black square in it was the "start recording" button. Actually, it was the other way around.

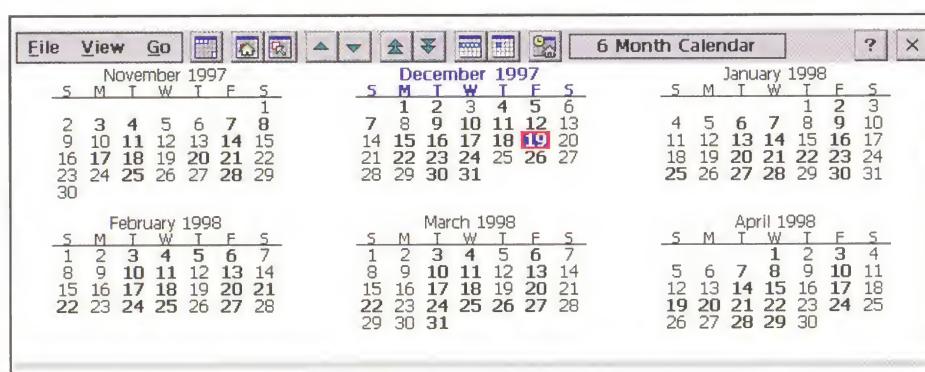
I pressed the red button, and recorded a ten-second voice memo, with the 620LX sitting on the desk about 18 inches from my mouth. How did I know it was a 10 second message? Voice Recorder comes with a nice little seconds counter at the bottom of the screen. Next to it is an available memory counter that tells you how many KBs of memory you have available for voice memos. With no messages recorded, the memory counter indicates that I can record 1,029 KBs of memos. My 10.6 second memo occupied 83 KBs of space. Sparing you the mathematics, that works out to be a total of 131.41 seconds worth of memos. I tried the math with a 3.3 second memo and it worked out to be roughly the same.

You can record voice memos two other ways. There is a small LED button on the hinge of the 620LX that is visible with the clamshell case closed or open. With the 620LX off and the case closed, you can press that button, wait for a single beep, and record a message. When you are finished with the memo, press the LED button and you'll hear a double beep, indicating the end of recording. Also, next to the ON/OFF button (upper left keyboard) is a REC button. You can press that while in another application to record a memo.

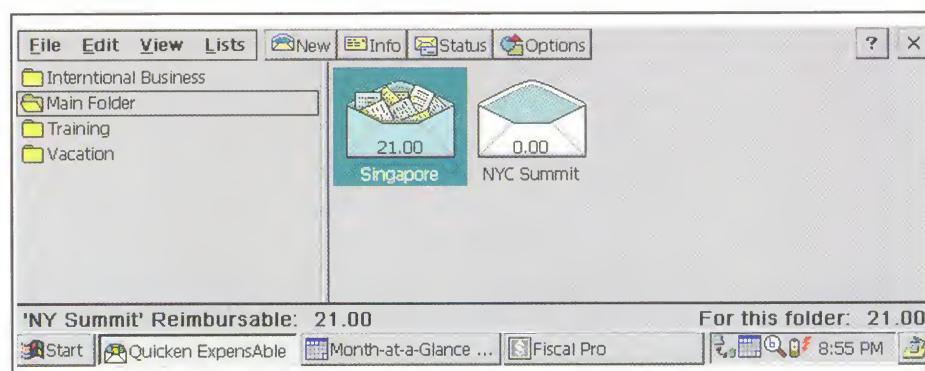
The sound quality is sufficient for voice memos. You can record them at your desk



Screen 1: You can select a day from the custom Month-At-A-Glance application and display the day's appointments in the corner of the screen.



Screen 2: The Month-At-A-Glance 6-Month Calendar shows you the previous, current and next four months' calendars. Days with appointments are bolded. Double tap on any date and Calendar opens up to the daily view of that date.



Screen 3: Built into the 620LX is Quicken ExpensAble. This application helps keep track of expenses while traveling.

with the 620LX approximately 18 inches from you if you speak up. If you're a soft speaker, speak directly into the microphone (on the front of the case, close to the button that opens the case). If you're recording a

memo on the go, hold the front of the case up close to your mouth and speak clearly - especially in a noisy environment like an airport.

I let my 11-year-old son Robert play with the 620LX one weekend and was rewarded with

an "I love you, Daddy" message when I turned on the 620LX Monday morning. He had not only recorded the message in Voice Recorder, he had gone into the Volume & Sounds Control Panel and customized the H/PCs Startup sound to play his recorded message.

Month-at-a-glance

The next extra built-in application that caught my eye was Month-at-a-Glance-Plus. The built-in Calendar application can display your appointments in daily or weekly views. This built-in utility lets you display your Calendar in month and six-month views (see screens 1 & 2 previous page).

You can access the built-in Calendar program from Month-at-a-Glance. However, if you start Calendar before opening Month-at-a-Glance, you cannot access the month or six-month views from Calendar.

Sending/receiving faxes with bFAX Pro

The HP 620LX comes with a commercially-available fax program built-in. bFAX Pro from bsquare development enables the 620LX (or any H/PC) using a standard PC Card fax/modem to send and receive text, bitmap, tiff, Word, and Casio Digital Camera files. bFAX lets you add a cover page and even specify a graphic file for a signature.

A confession: Although I'm the managing editor of a magazine about H/PCs, I hardly ever use their communications capabilities. I do almost all of my emailing and faxing from my desktop, and leave the mobile communications (and writing about the topic) to others. The point is, I'm a relatively decent approximation of an inexperienced user, as far as mobile communications is concerned.

To test the fax capabilities of the 620LX I first rummaged around the office for a PC Card modem. I found a Megahertz 14.4 PC Card modem, slipped it into the 620LX's PC Card slot, and wondered what to do next. Then I remembered a couple of excellent articles I edited about configuring the H/PC for a modem (see Fall 1997 issue, page 59-60). I won't go through the steps here, but I managed to set up a new remote connection session, which automatically detected the Megahertz card modem in the card slot.

I decided to try faxing the company from home. It worked!

bFIND

Another utility included with the 620LX is bFIND (from bsquare development). bFIND is a global find utility that lets users search the contents of their H/PC for text or character strings. This utility looks for char-

acters inside a file, not for file names. So, for example, I had taken some notes on Bill Gates' keynote speech at the Consumer Electronics Show, but I'd saved them under some file name that I didn't remember. I opened bFIND and typed "gates" into the Look For: field. I tapped on the Search button and quick as a wink, the Search Results showed that the text "Bill Gates keynote Sat,..." was in file DOC2.PWD in the My Documents folder. I tapped on the file name and it opened up in Pocket Word.

Quicken ExpensAble: tracking expenses

Another commercial program built into the 620LX is Quicken ExpensAble, a program to help a mobile professional track travel expenses.

I only travel a couple of times a year, and tracking expenses for reimbursement is a simple process. I keep an envelope in my coat pocket, and put all my receipts into that envelope. When the trip is over, I total the receipts on a separate piece of paper, slip that into the envelope along with all those receipts, write the name of the trip on the envelope, seal it and hand it to Wayne (our manager of accounting). Of course, I keep a copy of the receipts and total to check against the reimbursement check.

ExpensAble lets you create an "electronic envelope" on your H/PC to track expenses of a given trip or project. Here's how it works.

Tap the ExpensAble icon on the desktop to open the application. When you start a trip (or project), tap the "New" icon at the top of the ExpensAble main screen. A dialog box appears, prompting you to give the new trip or project envelope a name, and specify some expense-related information (see screen 3 previous page).

The new trip or project envelope appears on the main screen. The envelope is open, indicating that the trip or project is still underway. Tap on the trip or project's envelope twice to bring up the individual expense screen, where you enter the type of expense (food, lodging, etc.) date of the expense, amount, payment method, whether it's reimbursable or not, and other information.

This application will be most useful for mobile professionals - people who travel frequently. But it's easy to learn (or relearn) so even if you only travel once or twice a year, it's a nice application to have around. And even though it was designed to track travel expenses, you could just as easily use it to track expenses associated with small projects.

Synchronizing data/backing up the H/PC

One of the big features Microsoft and all the manufacturers promote about the H/PCs is how easy they are to synchronize with a desktop PC. Hewlett-Packard even included a special docking cradle with the 620LX to facilitate this process. I couldn't find instructions in HP 620LX Palmtop PC Pocket Guide or the Microsoft Handheld PC Companion guide. Fortunately, it seemed pretty straight forward. There were two ports in the back of the cradle: one for the connectivity cable and another for the AC adapter. I connected the cable into the Cradle and a serial port on my desktop PC, I connected the AC adapter and plugged it into the wall socket. Then, with fingers crossed, I inserted the 620LX into the Cradle.

The orange LED light came on, indicating that the battery was charging - the 620LX was getting its power from the Cradle.

Next I slipped the Microsoft CD ROM into my PCs ROM drive and set up CE Services 2.0. Setup uninstalled the 1.0 version before installing 2.0. I tapped on the icon to synchronize with the 620LX in the Cradle and eventually got a message indicating that there was no H/PC connected to the PC.

I pushed the 620LX down into the cradle gently until I heard a "click" and tried again. It worked, and I was walked through the synchronization setup dialog. After answering the appropriate questions, the Mobile Devices screen appeared on my desktop PC and the data in the Pocket Outlook applications on the 620LX was synchronized with Outlook's on my desktop. Whenever I connected the 620LX to my desktop PC (via the cradle or by inserting the connectivity cable into the 620LX's serial port) synchronization took place automatically and without problems.



The Mobile Device screen on your PC lets you change synchronization configuration, remove applications from your H/PC, and copy and translate files to and from your H/PC.

The next thing I wanted to try was copying some Word documents over to the H/PC and

see what they looked like in Pocket Word. I figured I had to drag and drop something, but didn't know what to do. I looked at the menu options in the Mobile Devices screen and found some interesting items. Its Tools menu has a selection called Applications Manager. From this you can remove applications you have installed on your H/PC. The Tools menu also had selections for Back Up Now, and Backup/Restore. There was even a File Conversion option in Tools. You checked a box to enable file conversion, but you didn't actually convert anything.

Finally, I went back to the Mobile Devices File menu and noticed the Explore option. I tapped on it and a window opened up, showing my desktop PC drives, our network drives, and the 620LX's drive. I selected a Word document from my desktop (TASKS.DOC) and dragged it to the Handheld PC folder next to the Mobile Devices icon. A dialog box appeared, telling me that the conversion was in process. A few seconds later, TASKS.PWF appeared in the Handheld PC folder. Mobile Devices gives you the option of automatically synchronizing Word and Excel documents every time you connect.

I opened the document on my H/PC and it looked fine. The tabs were still there, the headline was 16 point Times New Roman and the body of the text 10 pt. Copying the document back was just as easy. Microsoft says that some formatting options do not transfer from desktop to Pocket versions of Word.

Next I wanted to see how easy it was to back up the 620LX. On my desktop, in the Mobile Devices screen I tapped on Tools, then Backup/Restore, and finally OK. Mobile Device backs up the entire H/PC to a single file, which can be restored if your H/PC's batteries die and you lose everything. I don't believe you can restore individual files from the backup. If you want this capability, you should copy the files individually from the H/PC to the desktop, as described above.

The backup process takes a while. I had installed the Microsoft Entertainment Pack on the H/PC and copied over a number of Pocket Word documents. Fortunately, it runs in the background on your PC. As a matter of fact, I'm typing this sentence while the backup is going on. (It just ended, taking a little over 10 minutes.)

Looking back

Some of this review was written the first day I got the 620LX. The rest was written after three weeks of use. HP says that the batteries will last 5-7 hours on a recharge. They mean 5-7 hours of use, and one would rarely use an H/PC continuously for 5-7 hours. I didn't run the batteries dry, so I don't know if that's accurate or not. What I did do for a week was use the 620LX all day on the battery and attach it to its AC adapter at night. I never received a low-battery warning.



An Explore window in the Mobile Device application lets you copy files back and forth between your H/PC and desktop PC. You can also delete, rename, check properties, and perform other file-related operations from this window.

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I can't think of many situations where a mobile user would need more than that. Maybe international travelers on long plane flights might be away from a hotel room for longer than that. In that case, one could keep an extra battery pack charged and ready to go.

This has been as much a review of Windows CE 2.0 and some software from independent vendors as it has been a review of the 620LX. For the most part, I liked what I saw. You can still go all day without worrying about the batteries and the color screen is very readable. It still fits in your coat pocket, but is rather heavy to carry around. In truth, when I took it with me to the Consumer Electronics Show in January, I carried it in my cloth briefcase.

Microsoft did a good job improving Windows CE, independent software vendors did a good job providing useful software for the H/PC, and Hewlett-Packard built a solid, well-engineered device. Too bad I have to send it back.

NEW FOR THE H/PC

H/PC Products listed here include hardware, software, services, and resources. Prices listed are suggested retail price. Unless otherwise indicated, software products are delivered on floppy disk. Listings do not represent an endorsement by the editors. To announce in our next issue, please send an

email message to editor@thaddeus.com. For live links to the web sites mentioned in this section, visit our web site at www.thaddeus.com, or purchase our PowerCD.

Hardware

Accessories

HPC-2 Carrying Case

The HPC-2 fits handheld PCs and PDA units that measure up to 7.25x 3.75x1.25 inches and features a slim, bill-fold design and secure hook-and-loop tab closure for easy access. An organizer panel has slots for PC cards, business and credit cards, as well as, a hidden money slip pocket and convenient pen/pencil loop. In addition, the HPC-2 ensures your handheld is protected against knocks and bumps with padded Koskin material. The HPC-2 is available in black.

Price: \$24.99
Case Logic
Phone: 800-447-4848
Web: www.caselogic.com

H/PC Starter Kit

Concept Kitchen packages four accessories for handheld PCs. WriteRight Screen Enhancements is a screen overlay. Karma Cloth buffs out minor screen scratches. Brain Wash is a screen cleaner. The Desktop Stylus is "ergonomically designed to fit your hand to prevent muscle strain." See the H/PC Buyer's Guide for more details on Brain Wash and WriteRight Screen Enhancements.

Price: \$69.95 (S&H not included)
Concept Kitchen
Phone: 415-252-3333; Fax: 415-252-3323
Email: info@conceptkitchen.com
Web: www.conceptkitchen.com

Pentopia Styluses

Products include: dual function models that include a stylus and ballpoint pen, a tetherable grip cushion tip model, a classic style retractable, and an ergonomical design. Their line is expanding to include replacement styluses for existing Handheld PCs.

Prices: Vary
SureSourceSM
Phone: 888-777-8843; 203-385-5700; Fax: 203-385-5701
Email: tholson@netaxis.com
Web: www.pilotpen.com

Communications

Low Power Ethernet Card for Windows CE 2.0

The Low Power Ethernet Card (LP-E) plugs into the PC Card slot of an H/PC, giving the user a fast, location independent way to synchronize with a desktop PC, share networked files, and browse the office intranet or the worldwide web. The LP-E connects to a Windows network via 10BASE-T twisted pair cable and transfers data at the rate of 10 megabits per second -- 500 times faster than a serial port. The LP-E extends the battery life of its host H/PC by consuming minimal power.

Price: \$179
CONTACT: Socket Communications, Inc.
Phone: 800-552-3300 or 510-744-2700; Fax: 510-744-2727
Email: LPE@socketcom.com
Web: www.socketcom.com

Connectivity

CarConnect

This software/hardware package allows users to connect, retrieve and broadcast information about their vehicles' performance. A vehicle serial interface adapter plugs into the car's diagnostic port, and the application allows users to receive information such as vehicle speed, engine temperatures and pressures, diagnostic trouble codes, and fuel trim. Diagnostic information can be monitored by the driver or broadcasted to mechanics and fleet managers. Future software enhancements will include control functions (e.g. locks, windows, lights) on certain model cars.

Price: Not available
Dearborn Group, Inc.
Phone: 248-488-2080; Fax: 248-488-2082
Email: dg@dgtech.com
Web: www.dgtech.com

SS&S MultiPort Docking Station for Handheld PCs

Allows from 16 to 128 H/PCs to be connected simultaneously to a single host computer for synchronization. Windows CE 2.0 allows the host to recognize more than one H/PC, but they can only be connected to the host one at a time. The MultiPort Docking Station provides 16 to 128 ports for the handhelds, and automatically connects each to the Windows/NT or Windows/95 host computer sequentially. The MultiPort Dock is transparent to any software running on the H/PCs and host computers.

The MultiPort Docking Station consists of a mini-tower base unit and separate stations for each group of 16 H/PCs. Each 16-port satellite unit has four drawers that each hold four H/PCs in two rows of two machines each. The drawers are mounted on slides for easy access to the H/PCs in the back row. The MultiPort provides power to the handhelds for recharging the batteries while they are in their ports. Each group of 16 ports comes with its own high current power supply. The power supply and a serial port multiplexer are housed in the back of the satellite unit.

The MultiPort Docking Station is available directly from Shier Systems & Software and supports all H/PCs running Windows CE 2.0.

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H/PC PRODUCTS

Shier Systems & Software, Inc
Phone: 805-371-9391; Fax: 805-371-9454.
Email: info@shier.com
Web: www.shier.com

SmartBeam

Add an IrDA-compliant infrared port to your PC and communicate with your H/PC from up to six feet away. SmartBeam plugs into the computer's serial port and uses existing serial communication software to import, export, or transmit data without decreasing data transmission speed.

Price: \$49.95 (F5F500)
Belkin
Phone: 800-223-5546 or 310-898-1100; Fax: 310-898-1111
Email: info@belkin.com
Web: www.belkin.com

Voyager VGA for H\PC

This VGA adapter card lets you display Pocket PowerPoint presentations on VGA monitors and VGA projectors. PowerPoint previews, controls and notes are displayed only on the H/PC's display.

Voyager VGA comes with a software driver that lets you display PowerPoint slides on the VGA monitor. Its additional "Colorgraphic" feature lets you display a copy of the entire H/PC screen on an external VGA monitor, allowing Voyager to be used as a tool for training and "proof of concept" demonstrations for custom applications.

Voyager VGA slips into the HP/C's PC Card slot and connects to the VGA monitor or projector via a cable, included in the package. Voyager includes an independently programmable Cirrus Logic GD-5422 VGA controller allowing resolutions of up to 800x600 with 256 colors, non-interlaced. Voyager has 512K standard video memory. The Voyager card may be used in Type II or Type III PCMCIA slots.

Price 1-9 units: \$350 (each)
(Discounts available for purchases of 10 or more.)
Availability: March, 1998 (est.)
Colorgraphic Communications
Phone: 770-455-3921; Fax: 770-458-0616

Printers

Pentax PocketJetTM

This 300 dpi thermal printer connects directly to the Handheld PC. It prints full-pages and weighs only one pound. Does not need replacement ribbons, toner or ink. Accessories include an optional IrDA interface. Letter size thermal paper is now costing about eight cents a sheet when bought in quantities of 500 or more sheets. This paper is recyclable and difficult to distinguish from normal paper.

Prices: Begin at \$349 up to \$628
Pentax
Phone: 800-543-6144; 303-460-1600; Fax: 303-460-1628
Email: comments@pentaxtech.com
Web: www.pentaxtech.com

Software

Communications

FaxPlus for Windows CE

This WYSIWYG fax transmission software for Windows CE-based handhelds. Lets users write handwritten notes onto the screen and fax them. FaxPlus users can insert Pocket Word documents onto the A4-sized work area, and annotate these documents with handwritten notes or diagrams using the unique Transparency Overlay System (TOS). The TOS makes it possible for users to overlay Pocket Word documents with handwritten notes and drawings and then edit the same without altering the underlying Pocket Word document. For example, users can insert a Pocket Word document into FaxPlus, add their signature to it by using the stylus and writing on the screen, and fax it.

FaxPlus provides a set of drawing tools that can be used to create simple line drawings using a set of basic drawing shapes. FaxPlus works with internal modems (such as the one built into Philips' Velo 1), PC Card modems, and external modems. It provides a logging facility to help in trouble shooting..

Free trial version available now (see web site address below). User feedback will determine what additions/revisions will take place in the software. Final version to be available by February 1998.

Price: N.A.
BlueSkills International (India)
Phone: 0091-212-640404
Fax: 0091-212-640304
Email: info@BlueSkills.com
Web: www.BlueSkills.com/wince/wince.htm

Internet Force

This is a trio of Internet products: Scotty FTP, Telnet Force, and Net Force (see *Handheld PC Buyers Guide* for Scotty and Telnet Force).

Price: \$69.95

Net Force

This set of Internet Utilities is designed for Network Administrators. The software allows managers to monitor remote machines, and display items such as: login name and time, idle time, office location and office phone number. A TCP transaction based query pro-

vides netwide directory service to Internet users, and delivers online look-up of individuals or their online mailboxes, network organizations, DDN nodes and associated hosts, and TAC telephone numbers. Domain Name Servers (DNS) can be queried for information about other servers.

Price: \$9.95
Ruksun Software Technologies
Phone: +91-212-678286; +91-212-678288; Fax: +91-212-678866 or +91-212-627264
Email: info@ruksun.com
Web: www.mobilesoft.com

pkHPC A

Use your PC to communicate to Pick, Stratus and Unix host systems and emulate the following terminals: ADDS Viewpoint/Regent, Hazeltine HZ-1500 series, Lear Siegler ADM, PC Term, Stratus V102, Televideo 900 series, Wyse WY-50 and Zentec Z8000.

Price: \$49.95
Cambridge Computer Corp.
Phone: 800-462-4481; 203-288-6004; Fax: 203-288-0009
Email: webmaster@cam.com
Web: www.cam.com

ScreenShare

This communication software allows users to share live images or the image of any application, diagram, photo, or document between PCs and Handheld PCs via telephone or network links. Users can work interactively real-time without affecting the underlying data. All changes are displayed on the screens without the sender surrendering control of the application or the computer. Free 30-day trial download available.

Price: Not available
Visual Technologies
Phone: 800-355-0110; US: 610-918-9000; UK: +447000-849-483
Email: sales@vizitel.com
Web: www.vizitel.com

vxHPC

Users can connect any Windows CE-based handheld personal computer (H/PC) to Digital, Unix and Wang host systems. Provides full Digital VT52, VT100, VT101, VT102, VT220, VT320, VT420 and Wang 2110A emulation. Users can copy and paste between host sessions and Windows CE documents. Logons can be automated and keyboard remapping with command and hot keys is possible. System supports full color and has serial, modem and Telnet (TCP/IP) communications capability. Evaluation copy is available on the Cambridge Computer web site. Volume discounts and site licensing is available.

Price: \$29.95; FREE to employees of charitable nonprofit organizations.

Cambridge Computer Corp.
Phone: 800-462-4481; 203-288-6004; Fax: 203-288-0009
Email: webmaster@cam.com
Web: www.cam.com

Contact Management

Pocket Maximizer

This contact manager offers many of the same features of desktop Maximizer. Users can view connections between companies or individuals along with the tasks, appointments, and notes related to them. Users can link to Pocket Word, send e-mail, and synchronize with their PC.

Price: \$69
Maximizer Technologies, Inc.
Phone: 888-468-2475; 604-601-8000; Fax: 604-601-8001
Email: sales@maximizer.com
Web: www.maximizer.com/celink.htm

Games

BFM Casino 1.00 Game Package

Includes 10 popular casino games for the Windows CE (1.0 and 2.0) H/PC platform, including: Baccarat, Blackjack, Craps, Keno, CaribbeanPoker, Draw AndRidePoker, LetItRidePoker, Video Poker, Roulette, and SlotMachine. The program has full support for sounds and great graphics. All ten games together take around 500k on the H/PC, less if not all the games are installed.

Type: Shareware
Web: www.bfmssoft.com/programs/bcas.exe

Solitary

This is not a card game. The object of this brain twister is to jump over checkers so that at the end of the game only the very center checker is left remaining. The game includes a topscore list, 3D support, timer display, sound support, online help, and can be installed in two languages (i.e. English and German). 55 KB of memory space required to install. 2MB of RAM must be available to run.

Price: \$9.95
Krueger
Phone: +49-211-21 31 22; Fax: +49-211-21 31 29
Email: 100024.1403@compuserve.com
Web: <http://www.kse.de>
Web: www.mobilesoft.com

Tanagram/CE

This derivation from an ancient Chinese puzzle game creates puzzles from seven basic shapes which can be arranged in a nearly limitless number of ways. Users can create their own puzzles or solve the ones included.

Price: \$14.95
Pocket CodeWorks
Phone: 847-821-2700; Fax: 847-236-9141
Email: JeffL_MSN@msn.com
Web: info@codeworksinc.com
Web: www.mobilesoft.com

Ten games for Windows® CE

Dr. Bit2, The Memory, Lucky Cat, Best Block Breaker, Biorhythm, ECO, EMAS, Five Stones, Shogi and Cdisk may also be played on Windows 95 or Windows NT® and are available in English or Japanese.

Price: Not available
Salva Corporation
Phone: 425-251-4933; Fax: 425-251-4936
Email: info@salva.com

Healthcare

Advanced Reference Technology/CE

Medical references are available on Handheld PC's. These data files come ready to read—no additional software is needed. Download from www.BuyDirect.com.

Prices: Lexi-Comp's Drug Information (\$99.95)
Archimedes Medical Calculator (\$44.95)
Updated issues of Outlines in Clinical Medicine (\$175, students \$125)
K2 Consultants, Inc.
Phone: 888-452-6334; 603-551-5544; Fax: 508-842-3666
Email: sales@skyscape.com
Web: www.skyscape.com/k2

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E-mail & Internet access via Type II PC card modem*



**HEWLETT
PACKARD**

*SVGA PC-card and modem are optional. Microsoft, Windows and the Windows CE logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Screen is simulated. ©1998 Hewlett-Packard Company PPG489

Price: Not available
HMT Systems Limited
Phone: 888-204-6463; +44-121-224-1000
Fax: +44-121-553-7090
Email: paulc@hmtsystems.demon.co.uk
Web: www.hmtsystems.demon.co.uk

Home Care Manager®

The H/PC becomes an electronic patient recorder. Documentation is driven by a structured clinical knowledge base virtually eliminating text entry and promoting consistency. Pathways, outcomes, and benchmarking are integrated with charting. All clinical, administrative, and financial documentation are derived automatically from the structured chart.

Price: Not available
Patient Care Technologies® - PtCT®
Phone: 404-235-7828; Fax: 404-235-7839
Email: mlb@ptct.com
Web: www.ptct.com

MediHPC

Meditech host systems for H/PCs features full Data General 5220/5222 and Esprit 105C/125C emulation. Users can copy and paste between host sessions and Windows CE documents. Logons can be automated and keyboard remapping with command and hot keys is possible. System is serial, modem and Telnet (TCP/IP) communications capable, and supports full color. Evaluation copy is available on the Cambridge Computer web site. Volume discounts and site licensing is available.

Price: \$59.95; FREE to employees of charitable nonprofit organizations.
Cambridge Computer Corp.
Phone: 800-462-4481, 203-288-6004
Fax: 203-288-0009
Email: webmaster@cam.com
Web: www.cam.com

PEPID 98

Medical reference designed for Emergency and Primary Care Physicians, Residents, Interns and students. It contains diagnosis, pathophysiology and treatment recommendations for over 1,000 cases. PEPI 98 also includes drug monographs covering all essential prescribing information plus drug interactions and common overdose management for over 900 commonly used drugs. PEPI 98 is written in standard HTML (Hyper Text Markup Language) and will run on any Windows CE H/PC (as well as IBM or Mac PCs).

Price: \$295 software only; \$445 on an 8MB ATA Flash RAM card.

Contact: PEPI, Inc.
Phone: 888-321-STAT(7828)
Fax: 561-989-1140

Reference

AA European Companion & World Travel Companion

Cities of Europe or World cities information includes: maps, city and inhabitants background, itineraries for organizing time for a single evening or a full day, top 25 sights, restaurants, shops, entertainment, lodging, and useful phrases. The guides are written as HTML files for easy cross-referencing via Pocket Internet Explorer links. Installation transfers all cities to a PC for easy transfer of the desired cities to an H/PC. Each city requires 150-300kb of memory on H/PC depending on user's choice of "full" or "lite" version.

Price: European Companion \$27.95; World Travel Companion \$34.99
On-Board Info Ltd.

Phone: +44 171 370 0307 (9.00 a.m. - 6.00 p.m. British Summer Time / GMT); Fax: +44 171 370 0870
Email: support@on-board-info.com
Web: www.on-board-info.com
Web: www.mobilesoft.com

Sales Management

Sales Automation Management (SAM)

SAM is used in conjunction with third party back-end database systems that provide the database layouts and sales representative territory distribution. SAM is integrated into these systems either through a one to one relationship, where the H/PC is connected to a sales representatives laptop/desktop computer via serial communication, or a many to one relationship where the H/PC communicates with a central computer via modem.

Price: Not available
Logix, Inc.

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smARTwriter® lets you write on your HPC. Any size, any place, any program. And it instantly converts your writing into clean computer type, with breakthrough accuracy. Which means you can fill teensy spreadsheet cells by jotting big numbers all over the screen. Even on top of each other. So go ahead and make a mess. We'll clean it up.

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ART
Advanced Recognition Technologies, Inc.

H/PC PRODUCTS

Phone: 973-586-9600; Fax: 973-586-0141
Email: mail@logix-inc.com
Web: www.logix-inc.com

Special Input

SmartScribble

This scratch pad utility captures ink images exactly as drawn. Signatures, maps, or sketches can be added to a Word document. Whole strokes can be cut, copied or deleted from a drawing, without using the cumbersome 'eraser'. SmartScribble does not convert text into bitmaps, so text printed into a user's note can be easily edited. Vectorized capability means that file sizes can be up to 20 times

smaller. To be compatible with other Windows® applications, drawings would need to be saved in a standard bitmap format.

Price: \$29.95

ART

Phone: 818-678-3997

Email: support@artcomp.com

Web: http://www.artcomp.com

Web: www.mobilesoft.com

printing the only source for purchase was their company in Germany.

Price: Not available

PICA GmbH

Phone: +49-89-89-525-130; Fax: +49-89-89-525-139

Email: win2go@pica.de

Web: www.pica.de/win2go

Utilities

bREADY

This organizational tool lets users create a customized "book" of their files, spreadsheets, or Web pages for use on their H/PC.

Price: Not available

bSquare

Phone: 888-820-4500; Fax: 888-266-2329

Email: sales@bsquare.com

Web: www.bsquare.com/development

bTRACK

This management tool lets users monitor items like time, expenses, and mileage; and track them by client. It is compatible with most custom reporting programs.

Price: Not available

bSquare

Phone: 888-820-4500; Fax: 888-266-2329

Email: sales@bsquare.com

Web: www.bsquare.com/development

CE Install

Instead of writing their own installation routine, H/PC software developers can add this code to their program to handle the installation process. Includes C Source code for everything and royalty free license for unlimited distribution.

Applian Technologies

Phone: 415-831-1499; Fax: 415-668-6668

Email: info@applian.com

Web: www.applian.com

Charmap Deluxe

This utility lets users access and insert foreign characters and symbols into H/PC documents while using any font. This capability is not part of Windows CE 1.0. Works just like the character map utility in Windows 95 or NT.

Price: \$14.95

Applian Technologies

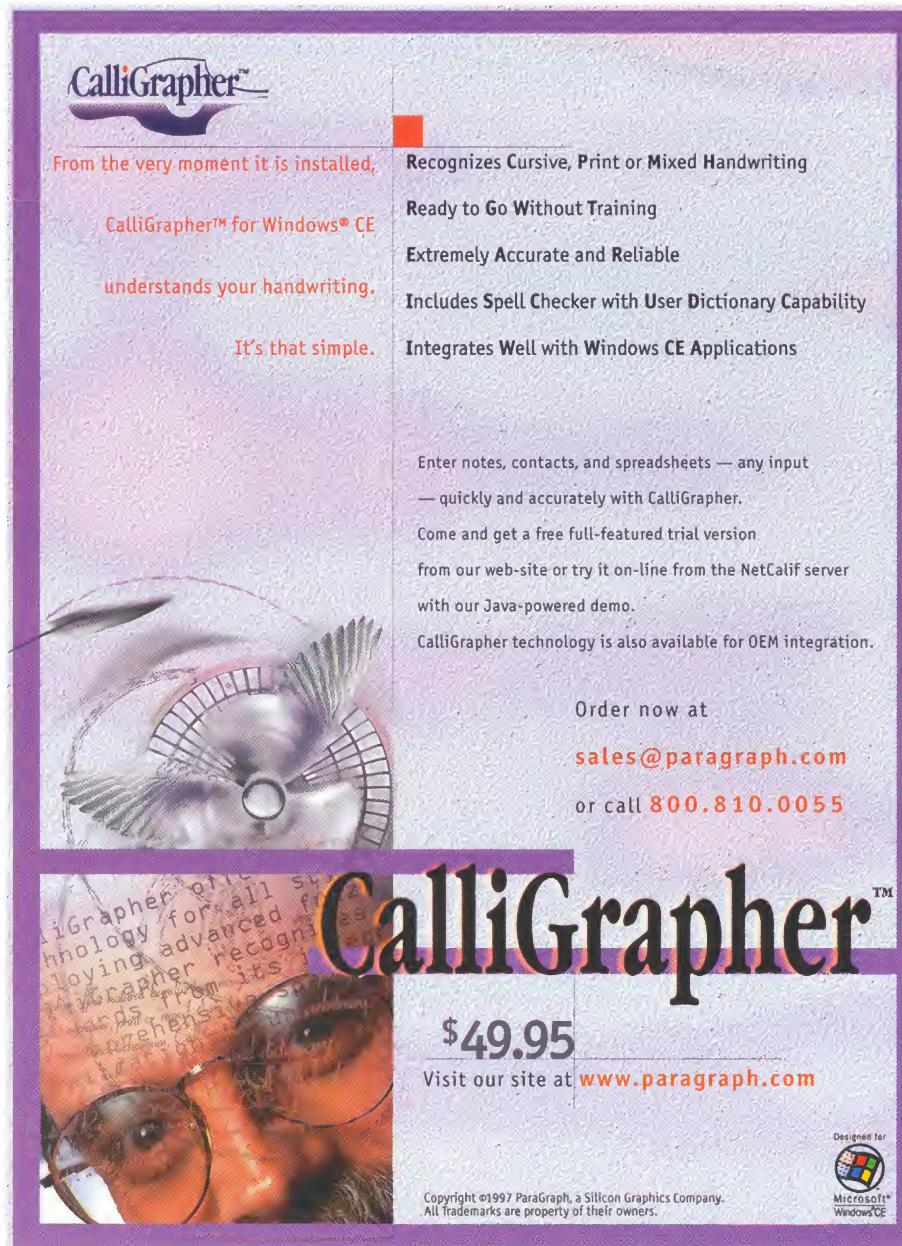
Phone: 415-831-1499; Fax: 415-668-6668

Email: info@applian.com

Web: www.applian.com

HPC Spell

Spell check with an interface similar to Windows Notepad. The checker is shipped with two English dictionaries either of which can be installed. The full English dictionary



Calligrapher™

From the very moment it is installed, Calligrapher™ for Windows® CE understands your handwriting. It's that simple.

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Designed for Microsoft® Windows CE

contains approximately 90,000 words (300KB), and the small English dictionary contains approximately 65,000 words (180KB). The spell checker program itself is 90KB. Email messages can be sent directly from the Spell Checker.

Price: \$39.95

PhatWare

Phone: 650-299-0110; Fax: 650-299-1369

Email: support@phatware.com

Web: www.phatware.com/support.html

Web: www.mobilesoft.com

TellMe

This is a personal data retriever which allows users to get simple information - a phone number, a definition, a stock ticker symbol, all from their H/PC. Free starter kit can be downloaded, then relevant databases according to needs may be purchased.

Type: Freeware

Iceberg Software

Phone: 703-435-3427; Fax: 703-435-9049

Email: Webmaster@IcebergSoftware.com

Web: www.IcebergSoftware.com

Services

Healthcare

CarePal

Home and mobile care providers can enter field data which can be consolidated with billing, payroll, and clinical documentation. The system integrates with the CogniMed Case/Disease management system, and accommodates 50-5000 users.

Price: \$1/visit (separate server and handheld fees)

CogniMed, LLC

Phone: 888-204-6463; 781-863-1147; Fax: 781-674-3182

Email: info@cognimed.com

Web: www.cognimed.com

Internet

AT&T WorldNet® Service

AT&T WorldNet Service offers a browser and connections of up to 28.8 Kbps to over 250 locations within the U.S. The service offers online help 24 hours a day, seven days a week. Download from website.

Price: \$19.95 a month (one free month)

AT&T WorldNet Service Software

Phone: 035-561-5789

Email: info@attnet.or.jp

Web: download.att.net/main.cgi?081p

Web America Networks Internet Access

Provides Internet access in the U.S. to 96% of the population. Capable of up to 56K Internet access. (There are no 56K modems for the H/PC as of yet.) Web America Networks provides digital connections coast-to-coast. The Internet, e-mail, and FTP services are a local call away because more than 10,000 locations are available nationally. This service is available to residential customers only, but sales agents are welcome. Two access plans available. The Metro plan for \$9.95 a month gives 30 hours of Internet access with a \$2.95 an hour charge for each additional hour. The Unlimited Plan gives unlimited access for \$9.95 a month if users switch to their 15 cents per minute long distance service. Nationwide Roaming is available for an additional \$5.95 a month and 5 cents a minute for Metro Plan and Unlimited Plan users.

Price: varies

Web America Networks, Inc.

Phone: 800-933-9322; Fax: 972-733-0756

Email: sales@wans.net

Web: www.internetservice.net

Fax: 510-838-7311

Email: keggen@penrite.com

Web: www.penrite.com

MobileSoft to provide greater support to all Windows CE devices

MobileSoft is changing the look, feel, and content of its web site beginning sometime in March to provide Windows CE users easier access to Windows CE software, hardware and OEM accessories. MobileSoft envisions the new site to be not only a place to buy things, but also a hub of information and a community for H/PC users. To this end, the site will feature editorial content from prominent writers/publications as well as tips on using and selecting products.

The web site is still accessed via www.MobileSoft.com.

From the new main screen you can access MobileSoft's downloadable library of H/PC software. You can now also access downloadable software for the new Windows CE Palm PC (described on page 10 of this issue).

Stores within a store

These are just the first two "stores within a store" on the new site. MobileSoft is working with a number of H/PC and Palm PC manufacturers to add "stores" that will offer their own Windows CE-related software, hardware and accessories. In addition, MobileSoft is developing stores for a number of independent vendors of CE-related software and hardware. Finally, MobileSoft is providing stores for non-Windows CE-related products like the 3COM Palm Pilot and the Psion series of handhelds.

Another change in the MobileSoft web site is that they will begin offering content in six different languages: English, French, German, Italian, Spanish, and Portuguese. MobileSoft plans to offer Japanese language content later in '98. MobileSoft is also studying the possibility of allowing payments in different currencies.

Software Development

MCIA

M-Systems provides its industry standard flashfile system for the new Windows CE environment. As a native Windows CE DLL, TrueFFS can be used by OEMs to make flash memory work as dynamic data and application storage. TrueFFS supports internal on-board flash arrays or commonly available removable flash such as PC or Miniature cards.

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Adding storage memory to your H/PC with a PC Card

By Mark Scardina

Windows CE has been out for over a year and Microsoft has recently released version 2.0 of the operating system. Developers have begun to embrace Windows CE, providing more and more software solutions to enhance the usefulness of our PC companions. Unfortunately, the more software there is available, the more of it you want to put on your H/PC. This brings us up against the limitation of any handheld device — internal memory.

The solution is simple: purchase a "storage PC Card" for your H/PC. Unfortunately, when you begin to ask vendors about such cards, you run into terms such as SRAM, FlashRAM, ATA Flash, and Series Flash, along with numerous card types described as Type I, Type II, Type III, CompactFlash, and Miniature. To compound the purchase problem, your H/PC manufacturer may not offer storage cards as part of their product line. In this article, I will try to explain these different terms and how they relate to expanding the storage on your H/PC.

Storage cards do not add system memory!

Before I start explaining what a storage PC Card is, I need to explain what it is not, and why I use the term "Storage PC Card." Many card vendors and even some manufacturers refer to this type of card as a "memory" card. I think calling it a memory card needlessly confuses users as to its purpose.

Any computer has two types of memory — program Memory it uses to run programs and storage memory it uses to store programs and data when it is not using them. H/PCs come with 2 MB to 16 MB of internal RAM memory that can be partitioned between system memory (used to run the programs) and storage memory. (The System utility in your H/PC's Control Panel is used to partition this

memory). There is one exception -- you can use a "Miniature Card" on a Philips Velo 1 to expand its internal memory.

A storage PC card adds additional storage memory and DOES NOT increase the amount of internal memory used by your H/PC to run programs — well, not directly. What a storage PC Card gives you is another place to store files. (It's somewhat similar to adding another hard drive to your desktop PC.) You can move files and folders out of your internal memory and onto your card. This frees up internal memory, which you can then repartition as Program Memory.

All that being said, now for some specific advice on selecting a storage PC card for your H/PC.

1. Make sure it's the right size!

H/PCs come with different kinds of card slots. Most have a standard PC Card slot that accepts Type I or Type II cards (NOT Type III). The HP 320/360LX series and some of the newer Windows CE 2.0 machines come with Compact Flash slots. All the new Palm PCs have Compact Flash slots. Make sure you know what type your device has and get the appropriate card. Type I, II, and III PC Cards have the same width and height (roughly the dimensions of a credit card). However, they come in different thickness. (Type I, 3.3mm thick; Type II, 5mm; and Type III, 10mm). H/PCs accept Type I or II cards. Don't try to put a Type III card in your H/PC's card slot.



2. Select a card with a 3.3 volt or 5 volt operating current - not a 12 volt card!

Currently there are 3.3v, 5v, and 12v cards available. I do not know of an H/PC that can write to a 12v card (although they may be able to read from them). Many H/PCs, including those from Hewlett-Packard, are designed for 3.3v cards only. Higher operating voltages generally mean higher current draw, decreasing your H/PC's battery life. Lower is better and the 3.3v cards have the advantage.

You may also want to consider the read/write current of the storage PC Card. This refers to the amount of current the card draws when reading a file from a card or writing a file to a card. Cards today will draw from



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30ma (milli-amps) to 90ma during a read or write. Again, lower is better, but this current does not significantly impact battery life.

Standby and Sleep current of the card also impacts your H/PC's battery life. Standby current is the amount of current that a card draws when it is not reading or writing data, but is "awake" and ready to do so. All cards automatically go into this mode when they are accessed by the computer. They stay in Standby mode drawing current for a predetermined amount of time and then automatically go into Sleep mode. Standby mode can last for quite a long period, drawing from 5ma to 35ma in the process.

Sleep mode requires the lowest amount of current from the H/PC, generally in the range of 2ma to 5ma. Any storage PC Card you purchase should have a Standby mode.

Unfortunately, you cannot predict a card's impact on your battery life by electrical specifications alone. Generally speaking, lower current requirements give you better battery life. But some cards, such as ATA cards, incorporate a "controller" that can reduce the read/write speed to increase battery life. Therefore, current consumption must always be viewed in the context of the number of bytes per second that can be read from or written to the card.

Generally speaking, manufacturers will provide information in the data or product sheets about the power management features of their cards. Their web site is an excellent place to search for this information when comparing brands.

Let's now take a look at the different storage technologies and how they stack up when used with an H/PC.

SRAM PC Cards work with any H/PC

Static Random Access Memory (SRAM) storage cards have the fastest performance of any storage PC Card and maintain very low operating currents. Because of this they are still very popular, although they are an older technology and a little more difficult to find. When an SRAM (pronounced "S" Ram) card is not being accessed, it does not draw any current. They are available in sizes from 128K to 4 MB, and work in any H/PC with a standard Type I or II card slot. They suffer two disadvantages not shared by other storage cards. In order for an SRAM card to maintain its data when it is out of your H/PC, or when your H/PC is turned off, it requires a lithium coin type battery to keep the card powered. These batteries should be changed once a year. Secondly, if you want to use the card in a Windows95 PC, additional drivers must be



installed from your CONFIG.SYS file to support the card. Finally, while these cards are available in smaller sizes than other types, they are the most expensive on a \$/MB basis.

Series Flash Cards

At the beginning of this article I went on for a bit about how storage PC Cards do not add system memory but that Miniature cards were the exception. Series Flash cards utilize flash chips in place of SRAM chips to eliminate the battery. While maintaining their data without power, flash chips do require their internal sectors to be erased before they can be written to. The management of this operation requires a separate driver and negatively impacts performance as the H/PC's microprocessor must manage the pre-erasing, and writing of the data along with program execution. As of this writing, the only cards available for the H/PC using this technology are the Miniature Cards used in the Velo from Philips.

ATA FlashRAM Cards

ATA FlashRAM cards represent the best combination of features and performance and are by far the most popular and prevalent storage cards used with H/PCs. Available in sizes ranging from 1 MB to 85 MB, these cards incorporate an ATA controller in much the same way as a mechanical IDE hard disk. As a result, there are no limits to size and the erasing of the Flash chips does not need to be handled by the H/PC microprocessor. On the down side, the built-in controller must be powered in a Sleep or Standby mode to access the card. The latest cards have reduced this current to a fraction of what it has been thereby reducing significantly the impact on battery life. These cards are also the most compatible with other PCs, making it easier to exchange data. Windows 95 and NT 4.0 come with built-in support for these cards. One word of caution: Older 12-volt ATA cards can still be found and these do not work with H/PCs. If you are looking at a used card make sure it is the newer 3.3v or 5v type.

Compact Flash Cards

Compact Flash storage cards are a relatively recent addition to the storage card scene. They are really nothing more than ATA FlashRAM cards in a compact enclosure. They have the characteristics of ATA cards (as described above) and your H/PC (or another PC) will view them as such. You can insert a Compact Flash card into a PC Card adapter and use them in the more standard Type II slot found in most H/PCs. Of the original H/PCs, only the HP 320LX has such a slot. Many of the new Windows CE 2.0 H/PCs and all of the Palm PCs and Auto PCs will include them. One important note: the original Windows CE 1.0 operating system only recognizes one PC storage card, therefore if your H/PC has a PC Card and CompactFlash slot only one can be used as storage. Windows CE 2.0 may correct this. (Note: the HP 360 and 620LX have both a PC Card and Compact Flash slot, and can access both at the same time.) Currently CompactFlash cards are only Type I but expect to see Type II cards in 1998 as they branch out to modems and pagers.

Using Your Storage Card

Whether you choose an SRAM or Flash card, once inserted, Windows CE displays an additional PC Card folder, representing the additional storage. (Windows CE does not use drive letters as in DOS and only one PC Card folder is available in version 1.0.). Upon inserting your card, you will get a pop-up message cautioning about using the card on batteries. This is normal, cannot be disabled and should not be of concern. Go ahead and answer "Yes". If your card was not formatted you will be asked if it can be formatted. Answering "Yes" will erase all data on the card. As distinct from the desktop version of Explorer you cannot reformat a card that has a valid format on it.

You move a file in Windows Explorer by selecting it, using the edit function to Copy it (Ctrl-C) or Cut it (Ctrl-X) when wanting to move, then go to the desired folder and Paste it (Ctrl-V) there. The PC Card folder is treated as any other folder on the internal drive. You can store data files, maps, docs and web pages there. If an application permits the selection of the installation location, you can install it in the PC Card folder. Once you have moved much of your data to the PC Card folder you can increase the memory you use to run programs (as described above). In my opinion, the most important function a storage card performs is as a quick way to back-up your data. This is especially true of cards that use Flash chips and don't need a backup

battery to keep to keep your data safe. If you're on the road and your PC companion's batteries die, a good backup of your data is a lifesaver! You can completely restore your files and configuration without a second PC, if you have it backed up on a card.

Care and Handling of Cards

PC storage cards are not like the hard drive in your PC. They are rugged and immune to vibration. They are however, electronic devices and should be treated as such. I know of no card that can survive a prolonged bath, being sat upon or stepped on and bent, or getting zapped by static electricity. The

best place to keep your card is in your H/PC. Many cards come with plastic hinged boxes which should be used for storing them when they are not in a slot. It is helpful to remember that there are up to 68 tiny connections in the end of the card that must work if the card to function properly, and a PC Card is seldom repairable. Warranties can range from 1 year to lifetime, but every company has exclusions for physical damage.

I have not recommended specific brands

or companies. Improvements come frequently and many companies simply put their label on a card manufactured by another company. The safe course is to always purchase a card that includes a return policy, just in case it proves unsuitable. With the information from a card's data sheet (usually available on the Web) and this article, I hope you will be able to make an informed purchase, maximizing your investment and getting years of use.

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Sources for Storage PC Cards

Below is contact information for manufacturers and vendors of storage PC cards. All of the following sell ATA flash cards as well as any other specified.

Centennial Technologies, Inc.

Phone: 800-942-0018
Web: www.cent-tech.com

Eiger Labs (CompactFlash)

Phone: 800-653-4437
Web: www.eigerlabs.com

Envoy Data

Phone: 800-368-6971
Email: info@envoydata.com
Web: www.envoydata.com

Kingmax (Compact Flash) Cards

Phone: 909-468-0958
Email: Kingmax@Kingmax.com
Web: www.kingmax.com

Mobile Peripherals

Phone: 888-999-6732
Email: sales@MPEC
Web: www.mpec.com

PalmTree (SRAM cards)

Phone: 617-871-7050
Fax: 617-871-6018

MagicRAM

Phone: 800-272-6242
Email: sales@magicram.com
Web: www.magicram.com

MGV (only DRAM Cards for Velo)

Phone: 800-440-4648
Email: sales@mvggroup.com
Web: www.mvggroup.com

PalmMate (CompactFlash)

Phone: 213-269-3555
Website: www.anmax.com

SHIER Systems and Software

Phone: 805-371-9391
Email: info@shier.com
Web: www.shier.com

StoreMate

Phone: 800-570-9547
Email: melillio@microtechint.com
Web: www.microtechint.com/stormate.html

Sentinel (Severe Environment Cards ATA cards)

Phone: 860-632-4582
Email: jkrupa-ray1@kaman.com
Web: www.raymond-engrg.com

SanDiskTM (Compact Flash Cards)

Phone: 408-542-0500
Email: info@sandisk.com
Web: www.sandisk.com

Simple Technology

Phone: 800-367-7330
Web: www.simpletech.com

Pretec

Phone: 510-440-0535
Email: cardinfo@pretec.com
Web: www.pretec.com

Synchrotech

Phone: 213-368-3760
Email: sales@synchrotech.com
Web: www.synchrotech.com

Viking's

Phone: 800-338-2361
Web: www.vikingcomponents.com

Staying In Sync

A look at three synchronization programs that keep your H/PC and desktop PC in agreement on important data.

By David Shier

NOTE: These reviews were of the products written for the Windows CE 1.0 operating system. All of the products mentioned have been upgraded for Windows CE 2.0. You will find a summary of the improvements, as described by the developer, at the end of each review.

Handheld computers were conceived, and are generally used as "PC companions." This means that the H/PC user expects to be able to seamlessly transfer calendar, contact and tasks lists, and other information, between their H/PC and another PC. Unfortunately, most programs store information in different ways. Any program that transfers your data, must translate it as well. Most people who speak two languages know how difficult it is to translate between the two. Substitutions have to be made, meanings are lost, new unintended meanings creep in. The same is true of the data used by different applications. For example, one contact database might have separate fields for the city, state, and postal code of an address, while another expects all this information to be stored in a single line. To properly transfer such information between the two computers, it is necessary for the program doing the transfer to understand how each program stores and interprets the information. (For more on the mechanics of file synchronization, see page 44.)

Simplify things — choose the same application on both platforms

If you have a choice, it might be better to have the same application on both of the platforms you want to synchronize. For example, the H/PC comes with a Pocket version of Outlook, which synchronizes with the desktop version without the need of any special synchronization software. Another advantage of

using the desktop version of Outlook for your personal information manager is that Windows CE 2.0 devices can automatically synchronize with the desktop Outlook when you connect the two devices. In addition, you can enable "active synchronization," which updates data whenever you make a change to either device.

Other companies provide desktop and Windows CE versions of their contact managers. Symantec has ACT! for Windows and Act! for Windows CE; Maximizer has Maximizer 97 and Maximizer CELink; and (my favorite) Odyssey has On Schedule/97 and Pocket On Schedule. All these programs can transfer and synchronize information easily, without the need of additional synchronization software.

Unfortunately, you may not have this choice. A certain program may be the standard in your company or you may have already invested many months or years of effort in learning another personal information manager and entering data into it. You can't afford to start over. In this case, you will need a synchronization program to assist you.

After using the synchronization programs and translation utilities, I have come to the conclusion that none of them are 100% seamless. I have always found it necessary to eliminate duplicate entries that they create, or fix problems with data that they misinterpreted. The

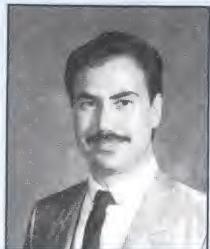
good news is that, once you get these corrections made, they don't seem to keep reoccurring.

I found it interesting that each of the programs that I evaluated here use different methods to achieve the goal of synchronizing data between the handheld and the desktop. All provided synchronization to more programs than simply Microsoft Schedule Plus, or Outlook, which are your only choices if you use the synchronization software that came with your H/PC. Also, each of them added some extra features that can help even if you chose to use only the Microsoft desktop PIMs. But, as you will see, each of the programs were unique in their style of operation.

IntelliSync, the stand alone solution

IntelliSync for Windows CE is from Puma Technology. Puma has versions of IntelliSync for other platforms, including the HP 200LX palmtop and the PalmPilot. The user connects the handheld to the desktop, runs IntelliSync on the desktop, and selects the programs that they want to synchronize with the Handheld. IntelliSync then transfers your data between the two computers. You can configure IntelliSync to automatically synchronize with an H/PC upon connecting to the desktop, but IntelliSync does not maintain active synchronization as described above.

IntelliSync was easy to install and sup-



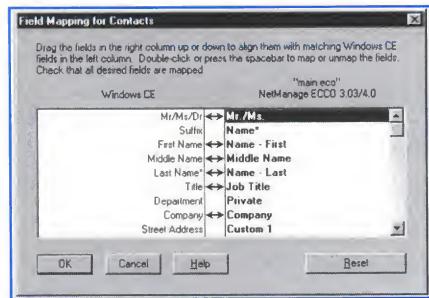
About The Author

David Shier is a former software engineer and marketing/sales director in the electronics industry. He is now President of Shier Systems & Software, Inc., which develops and markets products and applications for the handheld computer market. David is a regular contributor to *Handheld PC Magazine*. He can be reached at: Phone: 805-371-9391; Fax: 805-371-9454; E-mail: david@shier.com; Web site: www.shier.com.

ports a reasonable number of desktop applications, including:

- ◆ Microsoft Outlook
- ◆ Microsoft Schedule Plus
- ◆ Microsoft Exchange (address book only)
- ◆ Lotus Organizer
- ◆ Sidekick
- ◆ ECCO
- ◆ Goldmine
- ◆ DayTimer Organizer

Since each program offers different fields for storing information, IntelliSync provides an advanced settings menu which allows you to map the fields in each application to the other.



IntelliSync's field mapping screen lets you customize synchronization and specify where data in one application gets placed in another.

I like IntelliSync's versatility, but like it to be able to import and export to a generic file

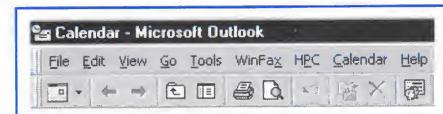
format such as "comma delimited" or CSV. This is something that many of the PIM programs can do themselves, but is missing from Windows CE. It would be a welcome addition on IntelliSync.

IntelliSync runs as a stand-alone program because it was designed for Windows CE 1.0. In fact, the version of IntelliSync I had was unable to recognize my Windows CE 2.0 H/PC, let alone synchronize it with my desktop PC. Until Puma updates IntelliSync, I would recommend it only for users of Windows CE 1.0 handheld PCs.

[EDITOR'S NOTE: By the time you read this review, Puma will have released IntelliSync 2.0. According to Puma, version 2.0 supports both CE 2.0 and CE 1.0 devices, as well as the recently announced CE-based Palm PCs. Like version 1.0, version 2.0 of IntelliSync supports "auto synchronize on connect" with CE devices for automatic synchronization. Version 2.0 adds support for new applications, including Lotus Organizer 97 GS, Symantec ACT! 3.0.7, MeetingMaker 5.0, Novell GroupWise 5.1/5.2, and Oracle InterOffice 4.1, as well as ASCII text import/export. In addition, Version 2.0 includes a new custom filtering feature letting users select and synchronize only the information that they need, and enhanced Outlook support for subfolders, user-defined fields, and custom forms. An upgrade is available to existing users of IntelliSync for Windows CE. For more information contact Puma Technology; Phone: 800-774-7862; Web: www.pumatech.com]

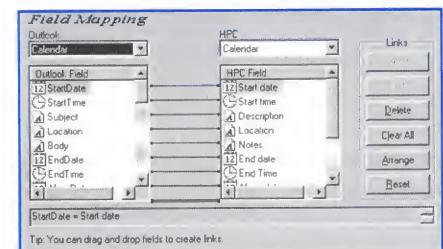
Harmony 97: The integrated method

Harmony 97 from Randsoft, also requires the user to initiate the synchronization process. However, instead of having to run a separate program, Harmony imbeds itself in the main menu of the PIM application itself. Harmony appears as an item called HPC on the menu bar, which pulls down a list of synchronization functions.



Harmony 97 adds an HPC menu item to Microsoft Outlook. To access Harmony 97, open Outlook and select HPC from the menu.

Once open, Harmony has features similar to IntelliSync. Field mapping is handled by a dialog screen similar to IntelliSync's. I find the style of the Harmony screen slightly more pleasing.



The Harmony field mapping screen lets you specify where data from the H/PC is placed in the desktop PIM, and vice versa.

I prefer synchronization that "just happens" like the Pocket Outlook/desktop Outlook synchronization described above. However, if you are going to have to "press a button" to start synchronization, I think that Harmony's approach is reasonable. Chances are you have the PIM program open most of the time. It's not too much bother go to the PIM screen on your desktop, pull down the HPC menu and initiate the synchronization.

On the other hand, I don't feel particularly comfortable with programs that modify other programs. In fact, I had problems getting Microsoft Outlook to run when Harmony was installed on my Windows 95 machine. This may not necessarily be a failure of Harmony, since I have found Outlook to be somewhat unreliable all on its own.

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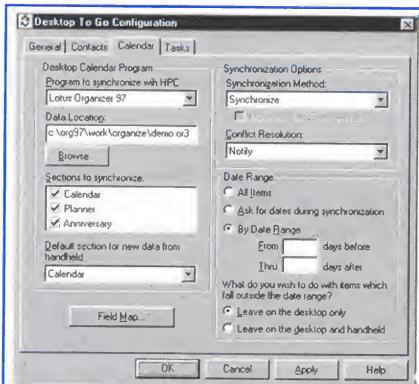
A new version of Harmony is promised, which adds Goldmine 97, Lotus Notes, Microsoft Exchange, and Novell Groupwise to the mix.

With all these "groupware" programs to be supported, this new version should make Harmony very attractive to enterprise users of handhelds.

[EDITOR'S NOTE: Randsoft is also coming out with version of 2.0 of Randsoft Harmony 97. According to Randsoft, its "Rapid Transfer" technology is at least twice as fast as competing products. Randsoft Harmony can be customized using a new Toolkit so that ODBC PC/Server databases can be synchronized with any database in the H/PC. Version 2.0 features Fast sync, multi-user capability, and provides support for custom solutions. For more information contact Rand Software Company; Phone: 888-726-3763; Web: www.randsoft.com.]

Desktop To Go: The seamless method

The final entry in our trio of synchronization programs is Desktop To Go from DataViz. This program integrates itself into Handheld PC Explorer (on Windows CE 1.0 H/PCs).



Desktop To Go configuration menu for Lotus Organizer.

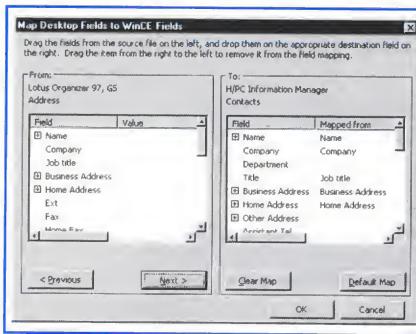
In the HPC Explorer, you can define specific file filter programs that can convert files as they are transferred to and from the H/PC. Desktop To Go uses this feature so that, once you have defined the filters to use, you can simply drag your files from the HPC Explorer window to your desktop or back, and Desktop To Go handles it from there. This works the same way that dragging a Word document

over to the handheld currently converts it to Pocket Word format automatically.

Desktop To Go is the only program of the group supporting files other than the PIMs. You can convert to/from Pocket Word and Pocket Excel, and desktop programs such as Word Perfect, Ami Pro, Lotus 1-2-3, among others.

Desktop To Go seems most adept at working with Lotus Organizer, and seems to have the most options for working with this program.

The all-important field-mapping dialog is not as clean in Desktop To Go as with the other two programs. I prefer the style that has the arrows or lines to assist in aligning the fields on one side of the dialog with the ones on the other side.



The Desktop To Go field mapping screen lets you specify where data from one device is sent on the other.

Unfortunately, Desktop To Go does not yet support the new Windows CE Version 2.0 machines. I would expect that this would be corrected soon, since DataViz indicates on their web site that Version 2.0 support is being worked on and was planned for release around the first of the year.

When Windows CE 2.0 is supported, this should be an excellent program. Version 2.0 of Windows CE has a new feature called Active Sync, which allows files to be stored in a special synchronization directory on the H/PC and on the desktop. Whenever the two computers are linked, Active Sync automatically synchronizes these files. With a helper program such as Desktop To Go, Active Sync should allow you to easily keep your files up to date.

[EDITOR'S NOTE: DataViz is also coming out with an upgrade of Desktop To Go for Windows CE 2.0 users. They will release it in the second quarter of 1998. For more information, contact DataViz; Phone: 203-268-0030; Web: www.dataviz.com.]

Get synchronization software that works with Windows CE 2.0

All of these programs offer utility to users of Windows CE and each outshines the others in certain areas. All are planning versions to support Windows CE 2.0, which should be available by the time you read this article. If they are not available, I suggest waiting until they are.

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Synchronization

By *Mike Blanchette*

Vice President and CTO of Puma Technologies

They are sometimes called "Personal Digital Assistants" (PDAs), Electronic Organizers or Handheld PCs (H/PCs). They are small, lightweight, and powerful handheld devices such as the Windows CE-based H/PCs, the recently announced Windows CE Palm PCs, a wave of new "smart phones" (from Nokia and AT&T) and "smart pagers" (from NEC). With them, mobile professionals have the ability to keep key contact, schedule, and task information with them wherever they are. These devices are also called "PC companions," but to warrant that name, they must become seamless extensions of the user's PC environment.

This means that handheld users must be able to easily and seamlessly synchronize information in their mobile device with the information in their desktop PC, notebook PC, or network server. Given the importance of the data involved, this synchronization must not only be fast, it must be accurate and reliable — all the time, every time! A good synchronization solution looks simple to the user, but there's a lot going on behind the scenes in a synchronization program. Let's take a look at some of the issues surrounding effective synchronization solutions, and the problems faced in creating them.

"One-size-fits-all" synchronization a tall order

There are a large number of mobile devices and applications on the market today, and many more are on the way. The Windows CE Contacts, Calendar and Tasks applications are standard in the CE-based H/PCs, but the desktop PC PIM software they will have to synchronize with varies. On top of that, not everyone uses H/PCs. (And some H/PC users employ contact management software instead of the built-in PIMs). In addition to

all this, both the devices and applications that they use today are certainly going to change in the future, requiring an architecture that is both adaptable and extensible.

Because of the differences in these devices and applications, a "one size-fits-all" synchronization solution is a tall order. It's also a necessary order. A synchronization solution that works with only one or two devices or applications simply cannot satisfy the variety of needs of a large number of users. Developing such adaptable and extensible synchronization architecture, however, is a daunting task, requiring enormous effort and insight. Not only must it accommodate the device/application disparity that exists today, it must take into account devices and applications that have not even been developed. Is it easy? No! Is it required? Yes!

Getting at the data

Synchronization solutions must be "content-aware." That is, they must be able to understand the data to be synchronized at the record and field level. The challenges in accomplishing this fall into two distinct areas:

Data Formats — It is highly likely that the structure of the data on the device and applications to be synchronized will not be the same. The synchronization solution must understand:

1. The details of the data formats in both applications (i.e., what data fields each has, how long the fields are, what type of data

field each is, etc.).

2. The interrelationships between and among the fields and records (i.e., which fields in one application are associated with which specific fields in the other application, whether the synchronization has to split or combine data from the field(s) of one application to the field(s) of another, etc.)

3. How the PIM application stores its data (the hidden data structure of an application that the user never sees).

Synchronizing data from the same application on two different devices is relatively easy. Synchronizing entirely different data formats and structures between disparate devices and applications is far more difficult. And, given the lack of standardization in data formats, and often the lack of published documentation on them, this problem grows exponentially as the number of devices and applications increase.

Over time, this problem may get a bit easier as standard data formats, such as those from the Internet Engineering Task Force (IETF), are defined. However, by themselves, standards are hardly a panacea since they only solve a part of the problem, leaving additional and/or vendor-specific features up to the synchronization developer to support.

Application Programming Interfaces

— In order to even access the data, an application programming interface (API) is normally used. Here, issues such as unique and permanent record IDs for each record, record add/change/delete flags, and field-vs-

ABOUT THE AUTHOR

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record-level access capabilities come into play. With a robust API, one that has been specifically designed for synchronization (e.g. it has unique record IDs and add/change/delete flags, and other necessary features), the problem is more straightforward. However, the reality is that in many cases, particularly with many existing applications, the API has not been designed for synchronization, and does not contain all of the necessary elements. In these cases, the synchronization solution must be that much more intelligent, often working around the shortcomings of the API. And in many cases, the device or application is "closed", and does not have a published API, making the problem that much more difficult.

While work is under way to define a few useful APUI standards, software vendors often provide access to their best features exclusively through a proprietary API. The reality is that synchronization solutions will continue to employ a mixture of standard and proprietary interfaces for the foreseeable future.

The synchronization process — now the fun begins

Once the complex issues of accessing and understanding the data between disparate devices and applications have been solved (a major accomplishment to be sure), the myriad of issues revolving around the synchronization process itself must be faced. It is in these areas that many solutions fall short, delivering less than reliable, accurate synchronization. The following are just some of the issues that the synchronization developer faces.

The features don't match — what do we do now?

Often times a feature in one application doesn't work the same way, or do the same things as the analogous feature in the other application, and/or vice versa. When this occurs, the synchronization designer must figure out a way to make similar features, implemented differently, or perhaps even missing on one side or the other, work in concert even though they were never meant to. One good example, but not the only one, is "recurring calendar events" (e.g. a staff meeting every Friday at 9:00 AM for the next 2 months). When one device or application supports recurring events, but the other side does not, the synchronization solution must know how to "fan out" the recurring event from one side to individual events on the other side. It must also be able to perform the opposite action when going the other way. To compound the problem, the synchronization

solution must also take into account "exceptions" to the recurring event (e.g. there will not be a meeting three Fridays from now), and maintain that exception list across future synchronization operations. If this is not done properly, the user will end up with missing appointments on one side, and multiple duplicate appointments on the other. Remember, accuracy is all important in synchronization!

We both made changes — who's right?

While on the road, you change next Thursday's meeting from 11:00 AM to 10:00 AM. Back at the office your administrative assistant (for whatever reason) changes the same appointment to 1:00 PM. When you get back to the office, you synchronize the two appointment books. It's easy for the software to recognize that the values are different, but how does it "know" that both of you made a change and, therefore, there's a conflict. The answer is that many times, the synchronization software must have historical knowledge of previous synchronization operations to know exactly what changed.

In the above example, the synchronization program would consult its own historical records of your appointments on both sides, note that they both reference the same previous appointment (i.e., the former 11:00 AM appointment) and infer that you both made changes. The program would then prompt you to resolve the conflict. On the other hand, if only you had made the change

(11 AM to 10 AM), the synchronization program would note the discrepancy, check the historical records, note that there was no change on the office side, and infer that the change was a simple update from your side, not needing conflict resolution.

Some synchronization applications provide "change" flags with the data to simplify this issue, but many do not. Consider even the simple case of deleting the contact record of someone you no longer work with from the mobile device. Without either change flags or historical knowledge, how would the software know, at the next synchronization, whether to delete the record from the application, or add it back to the device. In these cases, the synchronization software must be able to figure changes out on its own, or the accuracy of synchronized data will be compromised.

A rose by any other name

Another key issue to consider is the actual "mapping" of the data fields from one device or application to another. What one application calls "Title", the other may call "Position." You might not give this much thought, but the developer of the synchronization program had better! If he or she doesn't, you'll discover it soon enough.

The developer of a good synchronization solution will have already looked at the different applications it will be synchronizing and will have already figured out what data fields get mapped where. Most of the time,

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you will be able to go with the synchronization program's defaults, but a good synchronization program will let you change the field mappings when necessary, and even protect you from attempting an invalid mapping (e.g., mapping a date field to a single character type field). A flexible field mapping capability is critical with applications such as Outlook, ECCO, GoldMine and others, which allow the user to define new fields, or rename existing ones. Without such a field mapping capability, implemented properly, there would be no hope of accurate synchronization in many cases.

I'm Special, Can You Help Me?

Often, applications have unique capabilities that differentiate them from the competition. It might be the ability to store information in sub-folders, emulating the directory structure of a PC, or the ability to organize to-do items in an outline fashion for added convenience. Synchronization solutions must accommodate these application-specific features, and "map" them to the capabilities of the individual device, or users will most certainly view the solution as less than optimal, and the device itself less powerful for his or her usage

model. As these features can take many shapes and forms, this is one of the greatest challenges facing the synchronization designer, requiring a high level of inventiveness and creativity.

Maybe I Don't Want It All

There are many cases where the user may not want to synchronize all of the information in the application database with the device. Perhaps the actual database contains too many records for the device to hold. Or, it may be a group database, and the user only wants to synchronize the records for which he or she is the owner. It might be that the user stores business records in one database, and personal records in another database. In order to satisfy these, and other similar user needs, synchronization solutions must provide a powerful, but easy-to-use data filtering capability, allowing the selection and synchronization of only the set of records desired. Without such a custom filtering capability, the user would be stuck with an "all or nothing" solution, and too often this just doesn't fit the bill.

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Handheld Wisdom

Using the Handheld PC and Windows CE operating system to increase your personal effectiveness

By Rich Hall

Managing Editor, Handheld PC Magazine

Make the most of your time: Group your Tasks list by activity

Effective time management means avoiding unnecessary repeat actions that waste time and money. With a busy schedule and a long list of Tasks, it's easy to find yourself running in circles — going back to a store to buy forgotten items, or calling someone two or three times when once was all you needed. Grouping your Tasks by activity can solve this problem.

ON THE H/PC

Open any task and you'll notice a field called "Project." This field was designed to enter the project a particular task is associated with. You can also use it to enter the type of activity you are going to do. For example, my Tasks tend to fall in a number of distinct types: CALLS I need to make, things I want to READ, items I want to BUY, places I need to GO, etc. When it was time to go to the store, I used to waste a lot of time scrolling through my tasks list to find the things I wanted to buy. Then I started entering BUY in the Project field of a task associated with an item I needed to purchase. Now, when it's time to go shopping, I open tasks, tap on the tasks pull-down menu at the top of the screen, and select BUY. Only the items I have to buy are displayed in my Tasks list.

Use time-cues to stay on schedule with visitors

Leaders like to be "accessible" to employees or visitors, yet still get everything on their Tasks list done. B. Eugene

Griessman's Time Tactics of Very Successful People (McGraw-Hill, 1994) suggests expanding your "time-cue" vocabulary. Time-cues signal to others how much time you really have for them. For example, you can signal the close of a meeting in your office by standing up and moving towards the door, or saying, "John, before I have to take my next appointment, I need to ask you...."

ON THE H/PC

Used with discretion, the H/PC's Calendar alarm can signal the end of a meeting. In Calendar, as a meeting begins, tap your meeting appointment record twice (or select it and press (Ctrl)+(E)) to edit it. Replace the "Starts" time with the time you wish to end the meeting, then make sure the "Remind Me" box is checked so that the alarm will ring. You might set the reminder alarm to go off at least five minutes early so you can finish a point. At the appropriate time, you and your guest will hear the cue and wind the discussion to a close.

The technique of using a Calendar alarm as a time-cue can be used for regular staff meetings that tend to go on longer than is useful.

"Boilerplate" saves hours of paperwork

"Boilerplating" is an efficiency lover's dream, ideally suited to Handheld PCs or any computer. Whenever you insert a standardized block of text into a document, you are taking advantage of this time-saving technique.

ON THE H/PC

For example, let's say you are a tax consultant who likes to correspond on-the-go

using the H/PC. In your letters you find yourself giving the same answer about capital gains tax to many different clients. If you're smart, you save the answer and paste it into each new document, rather than rewrite it each time. First save the answer as a Pocket Word document (name the file "CapGains").

Whenever you get the question again, open a new Word document, type in: "Dear John, Thanks for the question on capital gains tax...." Then tap on File to get the pull-down menu and tap again on Open to get a list of available documents. Tap twice on "CapGains" to open a separate Word document.

Finally, you need to cut and paste between the two documents. In the CapGains document, press (Ctrl)+(A) to select all the text. Next, press (Ctrl)+(C) to copy the text to the Windows "Clipboard." Exit the CapGains document and you should be back in the original document you were creating. Make sure the cursor is where you want to add the boilerplate and press (Ctrl)+(V) to paste in the capital gains information. Look over the boilerplate to make sure it fits the letter. You may have to change tense to make it agree with the letter. Then save the document.

Keep boilerplate in a database

You can create databases for the H/PC with software products like AllPen Mobile Database (800-526-3977) and Visual CE (617-497-1300). Or you can use the built-in Contacts database for this purpose. The idea is to keep your boilerplate in the database, with a descriptive title in the Name field and the actual text of the boilerplate in the Notes field (Screen 1).

ON THE H/PC

We'll use the built-in Contacts database for this example. Let's say you're a sales professional and you need to keep boilerplate for the benefits and features of the products you sell.

1. Open your Windows CE Contacts application and tap on the New Contact icon on the Toolbar at the top of the screen to add a new contact card. Tap on the Business tab to the left to make sure you're in the portion of the card that records business information.

2. Then in the <Name> field enter the name of the product (for this example, we'll call the product the "Widget1"). Since you're already using Contacts for address and phone information, you'll want a way to group the boilerplate in the list so it doesn't get mixed in with the names and phone numbers of people. Contacts alphabetizes the list by last name. If you enter a two-word prod-

uct name (i.e., "Widget One") Contacts assumes that the second word is the last name. You could enter the names of all your boilerplate followed by a space and the letter "z" (i.e., "Widget1 z"). Contacts would assume that "z" is the last name and alphabetize all the entries at the bottom of the list.

3. Another way to do this is to put the word "Boilerplate" in the Company field for the contact. When you go to the main Contacts list and tap on the Company button at the top of that column, Contacts alphabetizes the list by company name and all of the Boilerplate is listed together. (You can place additional important information in other fields. For the above example, you could place the part number for Widget1 in the Work Tel field, the unit price in the Home Tel field, etc.)

4. Finally, go to the entry's Notes field and enter the boilerplate associated with that product. It may be a description of the product, its features and benefits, a more complete pricing list, or any information about the product you end up putting in a memo or letter over and over again. If you have this information in a word processing document on your PC or company computer network, you can convert it to MS Word format, transfer it to your Handheld PC, open it in Pocket Word and copy and paste the information from Pocket Word to Contact.

Now the boilerplate is easily accessible. Say, for example, you are writing a follow-up letter to a prospective client about a product. You open up Pocket Word, type in the introductory material (i.e., "Sue, I enjoyed meeting you at the Consumer Electronics

File Edit Tools < Find Company > ? X				
#ab	Last, First Name	Company	Work Tel	Home Tel
cde	Doe, John	ABC Corp	(515) 123-4567	(515) 222-2222
fgl	Widget1-Specs	Boilerplate		
ijk	Widget2-Specs	Boilerplate		
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opq	Gasket-Kit-105-B	Boilerplate		
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Screen 1: You can use the Contacts database to keep boilerplate. The Last, First Name field identifies the document. Place the word "boilerplate" in the Company field and the actual text in the Notes field. When you tap on the Company header in the main screen, the list is alphabetized by company name and all the boilerplate is grouped together in the list.

Show..."). You then open Contacts, tap on the "Company" button at the top of that column. Find the appropriate boilerplate. Tap on the entry and tap again on the Notes tab. Highlight the desired portion of the text in Notes. Press CTRL-C to copy the text into the H/PC's clipboard. Go back to the Pocket Word document, make sure the cursor is in the place you want to insert the boilerplate, and press CTRL-V to paste in the boilerplate.

Edit the material as necessary to make sure it doesn't sound like boilerplate, then save the letter.

Apply boilerplating to other uses — you can boilerplate any material you write, over and over again. Any expert consultant can receive hundreds of requests for information. Stock answers kept on the Handheld PC as boilerplate save time and let a consultant answer more requests for information.

A real estate investor or agent writing a contract can pull out a database of standard clauses for modifying a contract. A professor with 100's of essays to read and give feedback on, can store an assortment of often-used comments and cut them into his or her written feedback quickly and easily.

The concept of boilerplating can be used with spreadsheet templates or database files as well as text documents. In any case, the trick is to identify blocks of text, formulas and formats that you use over and over again, and save them as a boilerplate for future use.

role in establishing trust in the business and personal relationship. A common way to remember names is to put a list on your bathroom mirror or your car dashboard. Some people will associate key words with the names on the list to help them remember. The problem is that after a day or two, we usually don't notice the list again.

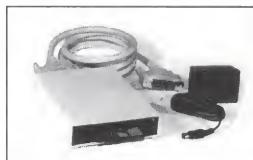
ON THE H/PC

You can set a repeating Appointment in Calendar to help you remember names fast. Set up an appointment with the person's name (and a key word or two if you want) in the Description field of the Appointment. Tap on the Recur tab and enter the desired frequency you want the appointment to come due. The more often, the quicker you'll learn the name. But it can get annoying.

Now each time your alarm goes off, the person's name you want to remember (and any key words you have with it) will appear in the Alarm screen of your Handheld PC. Read the name and key words to yourself, preferably out loud. You can press the "5 min snooze button" to repeat the name a little later. Doing this repeatedly should ensure that you remember the person's name. You can also use repeating Appointment alarms to remind yourself of affirmations, new words for your vocabulary, or key phrases or equations for an upcoming exam.

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Remembering a person's name

In both friendship and business, remembering a person's name can play an important

Andrew Seybold



PCCA Mobile Connectivity Activities

The Portable Computer and Communications Association (PCCA) is a not-for-profit association. Members include more than 100 companies from the computer and communications industries as well as end-user companies.

The PCCA serves the industries in several ways. First, the PCCA Modem Standards Committee has developed a standard wireless modem command set as an extension of the wired AT modem standard. Following quickly on this success, other wireless driver standards have been developed and turned over to other organizations including the Telecommunications Industry Association. Microsoft has included these drivers in its CD releases of several operating systems and is working closely with the PCCA on several fronts.

The MCC

There are several new initiatives underway including the development of a document for computer vendors outlining how to make sure that their portable computer products will not cause interference to, or be interfered with by radio frequency devices such as wireless modems and wireless LAN adapters.

Also of major importance, the PCCA has undertaken the task of working with both the communications and computer industries to try to solve what we believe to be the biggest obstacle to rapid wireless data deployment — wireless access to and from a user's own desktop computer or company LAN. Today, connections to wireless networks from the Internet are commonplace, but most companies install firewalls to prevent Internet access to their own systems.

Other types of connections between corporate computing assets and the wireless networks require substantial investment, are time-consuming, and require a full commitment to this type of data communications from the information manager or Information Technology (IT) department. Such com-

mitments are slow to come because the Information Technology community is not generally comfortable with radio frequency devices and is rightly concerned about the integrity and security of their data.

The PCCA's Mobile Connectivity Committees are working on this issue. While they do not expect to be able to create an "industry standard" way of providing for the required interconnections, they are working with Microsoft and other network software vendors to solve the security and access issues with additions and changes being made to Windows NT and Novell Netware operating systems.

Since these changes will take time to implement, the PCCA is developing a wireless "cookbook" for corporate IT managers and end users. This cookbook will provide in-depth information about existing products and services that are available in the marketplace that can be used to make the wireless to wired connections secure and less expensive.

As part of this project, the PCCA contracted for an in-depth study of both mobile workers and IT managers. The result of this research is available to PCCA member companies on a subscription basis. Phase One of the research, which deals with corporate IT professionals, was delivered to the membership in November of 1997. Phase Two, which deals directly with the mobile worker's wants and needs, will be completed by the end of the second quarter of 1998.

IT myths dispelled

The results of Phase One surprised many of

us. The first myth to be dispelled by the study was that IT professionals have no interest in wireless connectivity. In fact, the

Continued p. 56

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John Jerney



An Alternative to Standard Input Methods

For as long as there have been handheld computers, the great challenge faced by designers has been devising an easy way to get information into one. Early palm-top devices, such as the Poqet, took the standard desktop keyboard and shrunk it down -- until it was barely usable.

The next generation of handhelds thought they had a better idea and abandoned the keyboard altogether. Led by the Apple Newton Personal Digital Assistant -- and the GO PenPoint before it -- handwriting recognition seemed like a natural for clipboard and notepad devices.

Unfortunately, early handwriting recognition systems often suffered the fate of being an impressive technology squeezed into an under-performing platform. Then along came Palm Computing. Understanding that people are often willing to modify their behavior for tangible results, the company scored an impressive success by offering Graffiti. The system promised accurate handwriting recognition if you invested a little time learning how to enter a slightly modified alphabet. To a large degree, Graffiti succeeded. But is Graffiti (and having to relearn how you make your characters) the final answer? Fortunately, the answer is no.

One future solution is accurate, speaker-independent speech recognition. When we are able to enter arbitrary text-based information by simply speaking into our handhelds, the keyboard will all but disappear. However, I believe the pen will remain, to be used as it is in real life to capture and communicate visual information such as sketches, drawings, maps, and even the occasional imaginative doodle.

Judging by the progress speech recognition has made on desktop computer systems, the dream of accurate continuous dictation and fluid command and control is close at hand. And with handheld processors reaching speeds of 200 MHz -- in

the case of Digital's StrongARM 1100 and Hitachi's just-announced SH-4 -- these technologies are likely to migrate to portable systems faster than we earlier thought. In fact, some of the new windows CE Palm PCs come with voice command capability, and it is one of the central features of the new Windows CE Auto PC. (See pages 10 and 20 for more information).

But much of that capability is still the future. What about the here and now? What about the majority of devices that will perhaps never sport a processor running faster than a couple dozen megahertz, or less. And what about devices that will be designed to serve as smart cellular phones, lacking both a keyboard and a large screen. (In fact, Samsung was demonstrating just such a device at COMDEX, based on the Windows CE 2.0 operating system.)

In other words, what if you could use a standard telephone-style keypad -- with its ABC and DEF key arrangement -- to enter all the information you could ever imagine just by pressing these keys. Under this scheme, you would press each key just once, and the computer inside the device would determine which letter you meant based on how words themselves are constructed.

When it guessed wrong, which hopefully wouldn't be too often, you'd have to correct it. But under ideal circumstances, it would guess correctly most of the time.

Actually such a technology exists, and it's called T9. T9 is being developed and marketed by Tegic Communications, a 23-person company based in Seattle, Washington. To learn more about the company and its impressive technology, I turned to

Don Davidge, Vice President of Sales and Marketing at Tegic.

"The Tegic founders, Martin King, Cliff Kushler, and Dale Grover, originally developed the technology to serve people with severe disabilities," says Davidge. "It was intended to serve as a communication-aug-

Continued p. 55

What Decision-makers Read...



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ABOUT THE AUTHOR

John Jerney is editor of the seven-year old industry newsletter "Pen-Based Computing: The Journal of Stylus Systems" (www.volksware.com/pbc) and the Web-exclusive monthly "mobilis: the mobile computing lifestyle magazine" available at www.mobilis.net/issues.



Carl Merkle

Successfully Deploying Handheld PCs to a Workforce

In the last column, I predicted that handheld PCs will become popular with corporations and large organizations that want to harness the ultra-mobile communications and computing power of technology using these standardized, low-cost "thin-client" information devices. I said I'd explore the planning and implementation strategies necessary to successfully deploy handheld PCs to a large workforce in this column. I'll refer to the deployment of handheld PCs to a large workforce as "enterprise computing." The term really applies to any wide-scale deployment of computing technology in an organization.

Emergence of enterprise computing

We are entering into a new era of communications and computing characterized not by the merits of a single device, but by the capability and robustness of an entire system to meet organizational goals.

Originally, computing was a tactical resource and just a few well-trained specialists in the organization needed to use it. The convergence of computing and communications has allowed for wide distribution of electronic information over great or short distances. This now makes computing a strategic resource.

Many smart organizations are finding that all of their employees need to be able to easily access and share information — within and outside the organization. The emergence of enterprise computing means whole organizations need to become computer literate in order to thrive. Wide-scale deployment of computers capable of connecting to the Internet (a.k.a., "internet worked" computers) is a major systems project that has major strategic implications to an organization.

Thus it requires top level management

and board of director level buy-in and a great deal of care and effort in the planning process. It is difficult to implement for two primary reasons:

1) Resistance to change. Workforce automation will change the way people are currently working, and change is uncomfortable to most people. Significant resistance may be encountered, especially from those who do not currently use computers and feel they have operated well to date with paper based information systems. You'll need to begin preparing people for change early on, through memos, training sessions, and other activities.

2) High costs. Even if you are using low-cost information devices like handheld PCs, workforce automation is a major investment. Costs are associated with equipment, accessories, network infrastructure, the re-engineering of workflow, drafting new policies and procedures, and training. In addition, organizations must plan for future annual costs for wear and tear on equipment, loss, theft, new employee training, help-desk operations and system upgrades.

There are many stories about organizations that wasted a lot of money on technology — don't become one of those stories! Think about your investment, make a good plan, and then act together as a team to implement the plan.

ABOUT THE AUTHOR

Carl Merkle is the Director of Corporate Projects for Shier Systems & Software, Inc., and is responsible for managing delivery of ultra-mobile computing and communications business solutions to corporate accounts. A CPA by background, Carl was previously a senior manager with Ernst & Young, LLP. Carl lives in Irvine, California with his wife and three children, where the use of handheld PCs is woven into the fabric of their daily activities. He can be reached by e-mail at: carl@shier.com or by voice-mail at 714-559-1142.

Think — about what you want to do

Start by analyzing your needs and goals. Create a team of individuals within the organization to consider your strategic direction. Clearly state your organization's objectives and how the implementation of this technology will help you achieve them.

Understand the technology that is currently available and what it can and cannot do. Understand where current technology is headed. Understand the costs involved and what you are willing to spend. You'll have plenty of in-house knowledge about the business and its strategic direction. You may not have sufficient knowledge of computer technology. It may make sense to seek appropriate professional advice. At the end of this process you should decide whether to go ahead or not, and how far into enterprise computing you are going to go.

Enterprise networking is a technical project and it is easy to get sidetracked and focus too tightly on technical issues and not on the important people, process, financial and organizational issues. Clear goals and a vision helps keep you on track. A tool to do this is a "needs assessment".

A needs assessment is a detailed review of what types of systems and other technology the organization needs to build and main-

Continued p. 55

H/PC ONLINE



By Tom Gibson

Technical Editor, Handheld PC Magazine

Email: tom_gibson@thaddeus.com Web site: www.thaddeus.com

We're well into 1998 now and with the release of Windows CE 2.0, the Palm PC and Auto PC, on-line activity is heating up again. New sites are coming online and some of the old standbys are being rejuvenated. For those of us living in the colder climes, winter seems to be a time when some good software is developed. I guess when there are a couple feet of snow outside and temperatures that make your teeth chatter, there is nothing better to do than write software and breathe life into your website. This brings us to my pick as hot site this issue.

www.inet-1.com/~spamman/wince.htm

Chris Russell, A.K.A. SpamMan, lives in Utah in the U.S. He can't ride his motorcycle through 3 feet of snow, so he worked on his site and did a little programming. His site looks great and he has 3 freeware offerings for us in the form of RegEditCE, SpaceHogCE and PocketSwap.

RegEditCE is a Registry editor for WindowsCE. The Windows CE Registry contains information on the programs you have installed on the H/PC. Beta 2 supports the ability to browse the entire registry, as well as being able to add, delete, or modify keys, string values, or DWORD values. I've left the above explanation technical on purpose. If you don't understand it, don't use RegEditCE. Using it without knowing what you are doing can trash your H/PC to the point that you will have to re-initialize the machine and set it to factory condition.

SpaceHogCE is a simple utility that lists every file on your H/PC sorted by size. Using SpaceHogCE you can quickly determine which files are hogging up all the space on your H/PC, select the files you want to nuke, and delete them all without having to go find each file in its folder. Version 1.01 adds better shell integration (shell icons), the ability to filter out files that reside in the ROM (why should we care how much stuff is in the ROM? It doesn't take any of our precious space), and the ability to execute any file in the list by double-tapping it. Like RegEditCE above, this utility is not a toy and it can do serious damage to your H/PC if you delete a file that is needed for a program to run, but in the correct useage can help optimize your H/PC.

PocketSwap was mentioned in the Jan/Feb 98 issue, page 28. It is a utility that will automatically change your wallpaper for you. Chris has also been nice enough to provide links to pages that have wallpaper suitable for use with PocketSwap. Be sure to give SpamMan's site a visit.

www.winceonline.com/

WindowsCE Online is a site that has a lot downloads and links to online news stories concerning Windows CE. This site is one to place in your favorites folder.

www.craigtech.co.uk/pie/

Craig Peacock has joined the fray and put up a section of his site that is Pocket Internet Explorer friendly. Craig writes for *Handheld PC Magazine* and he also has one of the better sites for Windows CE, and the addition of the MPIE optimized page rounds out the site.

www.geocities.com/Athens/Acropolis/7378/

The Windows CE Lair is a nice site that has links to software news and commercial software reviews. This site has a liberal use of frames so you may not want to visit it with your H/PC, but it is worth checking out. The site features an alphabetized listing of all the features.

www.wincecity.com

Windows CE City is another cool site that features tips and tricks along with links to other sites. It also has downloads, reviews and news stories. There is a section for discussion with topics including machine-specific to general Windows CE. There is also a developers section.

There has been a lot of talk in the newsgroups and some pages showing up on the web about the Palm PC (see page 10 this issue). One of the first pages to show up is an article by Terho Uimonen writing for Info World. You can see the article at www.infoworld.com/cgi-bin/displayStory.pl?971212.wgryphon.htm

See the sidebar for other places to find information and seek assistance with your H/PC.

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Until next time, happy browsing and I'll see you OnLine!

Additional Online Support for the H/PC

In past issues of *Handheld PC Magazine* we mentioned a number of excellent online sources of support for H/PCs. These include:

www.thaddeus.com — Home page for *Handheld PC Magazine*. Here we share some highlights of our magazine, plus downloadable software. Our entire New Products section will be online with live links.

windowsce.com — Great links to other Windows CE sites, news and software.

www.craigtech.co.uk/hpc — Craig Peacock's WinCE home page, with lots of how-tos and links to other H/PC web sites. Craig is a regular contributor to *Handheld PC Magazine*.

members.aol.com/pdc_chrisd/wce/wce.htm — Chris De Herrera's web

site for Windows CE has lots of good information on PC cards and modems. Chris is a forum leader on AOL.

msnews.microsoft.com/news:microsoft.public.windowsce — Usenet newsgroup devoted to Windows CE on Microsoft's public news server.

news:comp.sys.palmtops / news:comp.sys.handhelds — Two other Usenet newsgroups that have content for Windows CE.

www.dillernet.com/wince.html

cgi.skyweyr.com/WindowsCE-TalkHome

Two Listservs mailing lists on Windows CE. CompuServe — Provides two forums that support H/PCs: Keyword GO HPHAND (section 17) and GO PALMB.

America On Line — Provides one special interest group that supports H/PCs: Keyword WCE. To take advantage of either of these, you must be a member of that electronic bulletin board system.

www.microsoft.com/windows_ce/default.asp — Microsoft's Windows CE web site has product announcements, late breaking news, free downloads and links to products from independent vendors.

www.casiohpc.com — Casio's web site is where to find information on the Cassiopeia H/PC and Auto PC.

www.compaq.com/products/handhelds/ — Compaq's web site is where you will find info for the Compaq PC companions. For support and information, see www.compaq.com/support or email: support@compaq.com.

mobile.ericsson.se — Ericsson Mobile Communications is a new player in the Windows CE marketplace with the MC 12.

www.hp.com/handheld — Hewlett-Packard's web site is where to find out about the 300/320/360/620LXs.

www.hitachi.com — Hitachi's web site is where you will find information on the Handheld PC.

www.lge.co.kr — LG Electronics' web site is where you will find the LG Handheld Phenom.

To get support from LG Electronics, email techsupport@lge.co.kr. www.neccomputers.com/products/products.html — NEC's Computer Systems Division web site is where you will find the home of the MobilePro. For support see www.nec.computers.com/ on the web or email techsupport@neccsd.com.

www.velo1.com — Philips Electronics' web site is where you will find information on the VELO. For support on your VELO, go to www.velonet.com on the web or email support@velonet.com.

www.sharp-usa.com — For information on the Sharp Mobilon HC 4000/4100/4500.

No objection to this Handheld PC

Profile: Lawyer leverages time and keeps important information on hand in court, at clients' offices and on the road.

By Michael J Posner

It is 8:00 a.m. at Palm Beach County Courthouse. The alarm of my HP 320LX handheld PC goes off, reminding me that I am due at a hearing in Judge Cook's chambers. Forgetting which chamber Judge Cook is in, I check my contact file. I keep this and other contact information in Pocket On-Schedule, an advanced contact management program that allows me to maintain separate databases for various contacts. On-Schedule tells me that Judge Cook is in Room 9c. It lists all of the Judges I deal with, their room numbers, phone numbers, and the names of their judicial assistants.

Since access to the court is on a first-come first-serve basis, I arrive 45 minutes early for my hearing. After signing in, I wait in the hallway to be called by the bailiff. At ten of nine he orders the first six groups into the courtroom. As we walk in my opposing counsel shoves into my hand a memorandum in opposition to a motion of mine.

In the back of the courtroom, I review his memo and compare it to my bulleted comments on the case that I keep in a Pocket Word document. Stretching the law, the opposing counsel cites a portion of the Florida Rule of Civil Procedure. I have a full-text version of this on CD ROM back at the office, and had already copied several sections of Florida Statutes and the Rules into my H/PC for on-the-fly research.

I review the full-text of the Rule my opposing counsel cites, note the flaw in his argument, copy the relevant quote from the Rules and use it in my winning argument. Unlike a laptop, which would be a distraction in the courtroom, The H/PC is very inconspicuous (except when colleagues pester me about what I have).

While waiting for the Judge to fill out the order, I open my time log file and record the client's name, file number, a description of the matter and the time I spent on it (in hours). At

the end of the day I print out my time log so my secretary can input the time into our office system. The time log is a simple excel spreadsheet and I use the sum function to keep track of my daily totals so as to maintain my firm required 7 hour day minimum.

On the way back to the office I listen to my voice mail on my cellular phone. An important client leaves an emergency message but no phone number. Finding his phone number and returning the call is easy, thanks to my contact file with over 1,000 entries. I just have to remember to record phone numbers so that my 320LX will always be up to date.

Later I arrive early at a client's office. I have to wait for five minutes to see him, but I don't waste the time. I load the 260 page great American novel I'm writing into Pocket Word, for some quick editing. I use a 4 MB Compact Flash memory card in the 320LX. I can store hundreds of pages of textual information on the card. Without it, I would always be worried about running out of file storage space on the 320LX. I also have a desktop PC Card reader for fast file transfers, as my novel now consumes 450k of space.

I finish with the client, get back in my car, and immediately get a frantic call from my secretary saying that I have to call a new client immediately. I grab my 320LX, switch to Pocket Paint (a drawing tool from Microsoft's PowerToys package, available for free on www.microsoft.com/windows

ce/hpc/software/powerr.htm). Using the free-hand drawing tool, I quickly scribble the new client's name and phone number down on the H/PC's screen while balancing the phone on my ear and avoiding traffic. It is at times like this that I am envious of the Philips Velo with its voice recording capability.

I finish talking with the new client, and continue my drive home. Traffic on the freeway is, again, bumper to bumper, with frequent stops. I don't let it bother me -- waiting for cars to move is the perfect time to play a few quick hands of black jack on my H/PC, one of the games included in the MS Entertainment Pack. I also love the freeware Infocom reader that allows me to play my old favorite text adventure, "Hitchhiker's Guide to the Galaxy."

My HP 320LX travels with me wherever I go. During the week it is parked in the right pocket of my coat jacket or on my desk. On weekends it sits in a case originally purchased for \$15 for my no-longer-used paper day planner. To protect my 320LX I've lined the case with pieces of foam and cut-up mouse pads.

I am writing this profile sitting on a beach chair in Captiva, Florida. The beach and sand are to my right and my son is in the pool straight ahead. Despite a laptop in my beach villa, I use the H/PC. The screen visibility of the HP 320LX in bright sun is fine. It's a natural outdoor companion, in the car, between clients, and even the beach.



ABOUT THE AUTHOR

Michael J Posner is a Board Certified Real Estate partner with the law firm of Cooney, Ward, Lesher & Damon, P.A. in sunny West Palm Beach, Florida. Specializing in Real Property, Corporate and Intellectual Law, Michael spends his spare time writing and playing with computers, and working on his novels. He is most proud of his four year old son Christopher and his wife, Florida Assistant Attorney General Sylvie Perez Posner.

Corporate Solutions *continued from p. 51*

tain a competitive advantage. It identifies the business needs you want to address. Once you've identified these needs, then you can worry about technology and, more importantly, people, process and financing issues. A needs assessment identifies where you are, how you got there, and where you want to go.

Plan what you are going to do

A comprehensive implementation plan should be drafted by the team and approved by the organization. This written plan provides a shared vision of what you want to accomplish - a roadmap that will save many headaches in the implementation of that vision. The plan should consider where you are, where you want to go, and how you want to get there. It should address people, processes, technology and financial issues. No plan is complete without a significant commitment to training.

The implementation plan needs to be developed with input and buy-in from many sources, including, not only the end-users, but technical support staff, vendors, managers, and trainers. The plan should incorporate a pilot program to test the concepts, work out bugs, and provide a reference point for benchmarking the results of a full-scale implementation.

Act together as a team

As mentioned above, a small team or taskforce should be formed with support and authorization from top management and the board of directors. The team does the initial needs analysis, recommends a course of action, and is responsible for implementing the final plan. The team should include representatives from the major groups in the company that will be effected by the technology. As mentioned, the first implementation of the plan (the prototype) should be done with a smaller controlled group within the organization.

Once the tools have been chosen, the pilot program run, the communications process started, and the technology installed, the key to success is training and user support. The training should integrate the functions of the electronic tools, the company's business process and an effective organizational framework supporting the end user.

Most computer training focuses on the basic functions of the machine. Many times this type of training can be accomplished before a user enters a class session, using an

off-the-shelf product. Class sessions should focus on the daily business processes specific to the user's job, using "real world" examples to solidify the users understanding. The users "thought process" must change as they learn how to use these new tools. A steady stream of easy-to-digest information must be available to the new user to help the user get the most of the system selected.

Think, plan, and implement! The process requires an investment in your time, attention, and money. But the long-term dividends to your organization will make it seem like putting money in the bank.

Pen-Based Computing *continued from p. 50*

mentation solution. These people typically can't write, or perhaps can't even speak."

"In particular, these people may have limited hand, head, or eye movement capabilities," says Davidge. "The idea was to create devices and software that would allow these people to input text with limited movement — by this I mean a limited ability to create more than a few keystrokes."

One of the devices that came from this research was called 'Owl', which was an eye-tracking device hooked up to a pair of eyeglasses. "It had eight lights around a circle on which the user could focus with the gaze of an eye," explains Davidge. "Through these eight lights, the person could then initiate eight different keystrokes."

That device worked in conjunction with software somewhat similar to T9, and would convert those keystrokes to words using a linguistic database. The company soon realized that when it came to inputting text on small handheld devices, everyone was a bit handicapped by the current user interface problems. "They realized that the biggest market opportunity was in the wireless handset and handheld computing arena," recalls Davidge.

T9 uses about a dozen keys, each with three letters on it like a telephone keypad. People simply hit each key — once — corresponding to the key on which the letter is presented. The user then continues to type along as with a standard keyboard.

"What T9 does is decode each of the ambiguous keystrokes and instantaneously comes up with the intended word," says Davidge. "A proprietary software algorithm works behind the scenes and, in conjunction with a linguistic database, decodes the keystrokes."

"There are other systems that predict letter-by-letter — determining the most likely

letter that will come in the sequence — but they tend not to be very accurate and they often require the user to focus a lot of attention on the screen to see if the next character is correct."

T9 instead uses a linguistic database to look at the various word options, doing so on a word-by-word basis. "What this allows the user to do is focus on the keypad itself, which is how users typically want to work with a small, portable device," says Davidge.

T9 consumes from 32 to 64 KB of memory, suitable for inclusion in just about any handheld device. It can do this since it doesn't use a dictionary. "If it was dictionary-based, it would take up far too much memory space on the device," says Davidge. "T9 is typically embedded into ROM and therefore has quite a small footprint."

"Instead of using a dictionary of, say, 60,000 words, we've encoded rules to build words. And using a high-compression system, we can encode a Ph.D. level vocabulary into a very small memory footprint."

Tegic intends to make a version of T9 available for Windows CE-based handhelds, though Davidge wasn't in a position to provide a timetable for the product's release. At least one of the new Palm PCs will include T9 capability. Another natural candidate is PalmPilot, where Davidge estimates up to only 50% of users actually use Graffiti for lengthy text input. In the meantime, Texas Instruments' new Avigo handheld organizer is the first to employ T9.

As devices continue to shrink, others are likely to include T9 capability. T9 has the right stuff for not only the new generation of smart phones, but also for quick-and-easy data entry on more conventional handhelds running Windows CE 2.0. Hopefully this will make the wait for speech recognition just a bit more bearable.

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Wireless Computing continued from p. 49

report shows that to varying degrees, most IT managers have an interest in enabling their mobile workforce with wireless data options. The report also showed that while the interest level is there, IT managers have found that neither computer nor communications industry vendors are well versed in the technologies, nor are they willing to assume a

systems integration role in the deployment of wireless data.

With this information in hand, many of the PCCA member companies are now re-thinking their approach to mobile communications in general, and wireless access in particular. Companies such as Microsoft are using the report to engage other divisions and departments within their own companies to help resolve the issues outlined, and at

least one major communications company canceled its own research because this study provided not only the specific information they were seeking, but in more depth than their own efforts would have produced.

The PCCA

Supporting the PCCA has many benefits for communications, computer hardware, software, and other companies. This organization is working hard to enable mobile communications and to make it easy to understand and implement. These activities will help grow the market for all concerned. While the PCCA standards work is vital to the success of mobile communications, the work being done by the MCC committees means that solutions can be found to make wireless data access as easy and as pervasive as wireless voice technology is today.

I am fortunate to have been one of the original founders of the PCCA, a current board member, and president of the association. All of the time and effort put into the PCCA is voluntary, but many companies recognize how important this work is and encourage their employees to give of their time generously.

To find out more about the PCCA, visit the web site at PCCA.ORG or send an e-mail to Bob Venter, the executive director (bobv@outlook.com). Bob will be happy to send you additional information.

What Does This Have To Do With Handhelds?

This magazine is supporting the efforts of the PCCA and has permitted me to use my column in this issue to provide an update of our activities. I firmly believe that as we are able to add wireless data communications to our mobile devices of choice, they will become ever more important to us. Using wireless one and two-way data systems, we will be able to update our calendar, read and send e-mail and faxes from our handheld devices, receive and review files, and in general, extend our information reach on a near-real-time basis from our desktop to wherever we happen to be.

Wireless data has been around for a number of years. It has not been a fast-growth industry, but the marriage of small pocketable devices and wireless data technology will change all of that. As these devices become more pervasive, the demand for untethered communications will grow. If the industry has resolved the connectivity issues, we will all benefit.

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Priority Focus, a Handheld PC training company, introduces "Self Management with the Handheld PC." This course unlocks the HPC's potential for the mobile professional.

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PC Companions

At A Glance

CASIO

CONTACT your local Casio dealer or Casio, Inc.; Phone (USA): 201-361-5400; Fax: 201-361-3819; Web: www.casio.hpc.com



Casio CASSIOPEIA A-20 — \$599.95

HARDWARE: 80 MHz Hitachi SH-3 CPU; 8 MB RAM; 640 x 240 backlit display with 4 shades of gray; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot; CompactFlash Card slot; built-in microphone and speaker; two AA Alkaline batteries; backup battery; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: QuickNotes; pcANYWHERE CD; E-Mail Access; Financial Consultant Calculator; bFAX Pro; IntelliSync; Socket Connectivity product; PageSoft Pro; GTE Personal Sender; Tetriss; Casio QV-Link; Casio Project Scheduler; Casio Paint-Atlas; Casio Sound-Vega voice memo; Casio Voice Applications voice command; Casio Teleconferencing Software; Casio Easy File Tool; Financial Consultant Calculator;

ACCESSORIES: PC Docking Cradle; AC adapter; Rechargeable Battery Pack; Windows CE 2.0 upgrade kit for CASSIOPEIA A-11 and A-11+.

COMPAQ

CONTACT your local Compaq dealer or Compaq DirectPlus; Phone (USA): 800-888-0593. Web: www.compaq.com



Compaq C-Series — Not Announced

HARDWARE: 75MHz MIPS RISC CPU, 16MB ROM, 8MB or 16MB RAM (expandable to 20 or 32 MB), 640 x 240 mono or color touch sensitive screen; integrated 33.6 modem (optional in some countries); Type II PC Card slot; powered by two Alkaline AA batteries or NiMH rechargeable battery pack (optional on some models) or A/C adapter (included); serial cable; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applica-

tions. Software on disk or CD ROM: not announced.

ACCESSORIES: Windows CE 2.0 Upgrade Kit for PC companion C120, C120+, and C140; Battery pack; Cradle; Auto sync Cable; Stylus 3-Pack; 16MB Ram Expansion; Auto Adapter; Carrying Case; Slip Case; Portfolio Case; AC Adapter; VGA PC Card; Compaq Mobile Internet Antenna.

HEWLETT-PACKARD

CONTACT your local HP dealer or Hewlett-Packard Company; Phone (USA): 800-443-1254; Web: www.hp.com/handheld



HP 620LX Palmtop PC — \$899

HARDWARE: 75 MHz CPU; 16 MB RAM; 640x240-pixel 256 color screen with "natural white" backlighting; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot; CompactFlash Card slot; Lithium-Ion rechargeable battery pack; 3V CR2032 coin cell backup battery; microphone and audio speaker; synchronization cable; docking cradle; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications; bFAX; bFIND; Financial software; Remote Networking and Terminal Application software; Calendar viewing utilities. On disk or CD with product: H/PC Explorer version 2.0; Translation software to convert HP 100/200LX & OmniGo 100/120 appointment/ phone books to H/PC formats; Trial software from independent software vendors.

ACCESSORIES: HP CompactFlash Memory plus PC Card slot adapter: 2 MB - \$99, 4 MB - \$149, 10 MB - \$299, 15 MB - \$ N.A.; Worldwide AC Adapter for 620LX - \$ 34.99; DockingCradle/AC Adapter for 620LX - \$n.a.; Sync. Cable - \$14.99; HP Leather Case - \$69; Stylus 3-Pack for 620LX - \$N.A.; 620LX standard battery pack - \$69; 620LX Extended battery pack - \$119; 620LX VGA PC Card adapter - \$149; 620LX External Battery Pack Charger - \$N.A.



HP 360LX Palmtop PC — \$699

HARDWARE: 60 MHz CPU; 8 MB RAM; 640x240 monochrome screen with "natural-white" backlighting; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot; CompactFlash Card; 3V

CR2032 coin cell backup battery; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications; bFAX; bFIND; Financial software; Remote Networking and Terminal Application software; Calendar viewing utilities. On disk or CD with product: H/PC Explorer version 2.0; Translation software to convert HP 100/200LX & OmniGo 100/120 appointment/ phone books to H/PC formats; Trial software from independent software vendors.

ACCESSORIES: HP CompactFlash Memory plus PC Card slot adapter (see 620LX accessories); 300-360LX AC Adapter - \$29.99; 300-360LX HP Docking Cradle/AC Adapter - \$29.99; Synchronization Cable - \$14.99; HP Leather Case - \$69; 300-360LX stylus 3-Pack - \$9.99



HP 320LX Palmtop PC — \$499

HARDWARE: 44 MHz CPU; 4 MB RAM; 640x240 monochrome backlit display; Type II PC Card slot; Compact Flash card slot; IrDA infrared port, synchronization cable; AC adapter; docking cradle; user guides. The 320LX will print directly from Pocket Word and the PIMs, via both IR and RS-232C ports.

BUILT-IN SOFTWARE: Microsoft Windows CE 1.1 operating system and "Pocket" applications. On disk or CD with product: Synchronization software; Microsoft Schedule+ 7.0, trial versions of several Windows CE applications. H/PC Explorer version 1.1; HP 100/200LX & HP OmniGo 100/120 translation software; bFAX Pro; Mail on the run!; Pocket On-Schedule; Wireless solutions bundle from Ardis; Wyndmail/CE

ACCESSORIES: (see 360LX accessories)

HITACHI

CONTACT your local Hitachi dealer or Hitachi Home Electronics; Phone (USA): 770-279-5600 or 770-279-5696; Web: www.hitachi.com



Hitachi Handheld PC — \$N.A.

HARDWARE: 80 MHz SuperH RISC-Hitachi CPU; 8 MB RAM; 640x240-pixel backlit monochrome display; internal modem; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot;

Compact Flash slot; NiMH battery pack (included) or AA alkaline batteries; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on CD ROM: not announced.

ACCESSORIES: AC Adapter; Serial Cable; 28.8 bps Modem Board; Cradle with IrDA, VGA, Serial and AC adapter charger interfaces.

LG ELECTRONICS

CONTACT your local LGE dealer or LG Electronics Customer Information Center; Phone (USA): 800-243-0000; Web: www.lge.co.kr



LG Phenom — \$599

Hardware: 80 MHz SuperH RISC-Hitachi CPU; 8 MB RAM; 640x240-pixel backlit monochrome display; internal fax/modem; QWERTY keyboard; VGA out port with cable; serial port; IrDA infrared port; Type II PC Card slot; Compact Flash slot; voice memo capability; rechargeable battery pack; docking station; power adapter; user guides; CD ROM with third party software applications.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on CD ROM: not announced.

ACCESSORIES: LG Windows CE 2.0 upgrade

NEC

CONTACT your local NEC dealer or NEC; Phone (USA): 306-4636; Web: www.nec.com



NEC MobilePro 700 — \$n.a.

Hardware: 54 MHz low power NEC MIPS VR4102 CPU; 8 MB of RAM (expandable to 32 MB); Dimensions (9.65 x 4.8 x 1.22 inches); Weight (1.48 lbs); QWERTY keyboard; 640x240 backlit monochrome display; built-in 33.6Kbps low-power hardware modem; two AA alkaline batteries; one Type II PC Card slot, one Compact Flash slot, a VGA port with cable adapter; serial and IrDA infrared ports; built-in microphone and speaker for voice recording capability; QuickKeys (program keys to launch applications); AC adapter, PC cable, RJ-11 cable, batteries; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Bonus Software Bundle includes: Virtual

Courier; pcANYWHERE; Intellisynch; bFAX; QuickNotes; Sprynet.

ACCESSORIES: 16 MB Memory Upgrade; 32MB Memory Upgrade; Compact Flash Card; Docking Cradle; Serial Cable; VGA Cable; Rechargeable Battery Pack; Battery Quick Charger (Battery included); AC Adapter; Modem Cable; Stylus Pak (3-pens); Carrying Case. Windows CE 2.0 Upgrade kit for MobilePro 450 & 500.

NOVATEL WIRELESS

CONTACT Novatel Wireless; Phone (USA): 888-888-9231; Web: www.novatelwireless.com



Novatel CONTACT — \$N.A.

Hardware: MHz Hitachi SH3 RISC CPU; 4 MB RAM (expandable to 32 MB); 640 by 240 backlit touch screen, an integrated 19.2 Kbps CDPD wireless modem (uses existing U.S. Cellular telephone networks) and a 14.4 Kbps landline modem; LEDs (email and multi-function indicator); IrDA infrared port; Serial/VGA port; Type II PC Card slot; RJ-11 modem jack; microphone and speaker; QWERTY keyboard; Lithium Ion rechargeable battery; Lithium coin cell backup battery; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on CD ROM: not announced.

ACCESSORIES: (All items included in the original package can be purchased as accessories); Serial/VGA cable; Leather Case; Cradle; DC Car Adapter.

PHILIPS

CONTACT Philips Mobile Computing Group; Phone (USA): 888-FOR-VELO; 408-558-2200; Fax: 408-558-2222; Web: www.velo1.com



Philips Velo 500 with 16 MB RAM — \$639

Philips Velo 500 with 24 MB RAM — \$749

Hardware: 75 MHz MIPS processor; 16 MB or 24 MB of internal RAM (expandable to 40 MB or 48 MB with an optional 32 MB DRAM Miniature Card); built-in low power 28.8 Kbps modem with 9600 Kbps fax; DRAM Miniature Card slot; Flash/ROM Miniature Card slot; 16 level grayscale monochrome screen capable of 480x240 or 640x240 pixel display; built-in 28.8 fax/modem, Velo Voice Memo system, built-in phone jack, phone cord, rechargeable NiMH battery pack, and docking station with AC Adapter.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on CD ROM: not announced.

ACCESSORIES: Velo 1 upgrade to Windows CE 2.0; 2 MB DRAM Card; 4 MB DRAM Card; 2 MB Flash Miniature Card; 4 MB Flash Miniature Card; Velo Docking Station; Velo Type II PC Card V-Module; Velo-to-PC Serial Cable; NiMH Rechargeable Battery Pack; Traveling AC Adapter; Carrying Case.

U.S. RETAIL OUTLETS INCLUDE: CDW, CompUSA Direct; Mobile Planet, PC Connect, and PC Zone.

SHARP

CONTACT your local Sharp dealer or Sharp Electronics Corporation; Phone (USA): 800-BE-SHARP; Fax on demand: 630-397-8601; Web: www.sharp-usa.com



Sharp Mobilion HC-4500

(color display, 16 MB RAM) — \$999

Sharp Mobilion HC-4000/4100
(color display, 4/8 MB RAM) — \$600-900 (est.)

Hardware: 73.7 MHz MIPS CPU; 4, 8, or 16 MB RAM; built-in 33.6Kbps data/9.6Kbps fax lower power modem. The HC-4000 and 4100 have a 16-gray scale monochrome touch-screen display: HC-4500 has a 256 color touch screen display. All Mobilons have a Type II PC Card slot; serial port; IrDA infrared port; 64-key keyboard; one-touch application launch keys; LED indicators (Calendar and Task reminders, World Clock daily alarms, when it's time to charge the batteries, when your modem is connected, and when you are recording a voice memo); built-in microphone and speaker (to record voice memos); external record button; AC adapter, CR2032 Lithium backup battery; PC Link serial cable; RJ-11 modular phone cable; stylus. The 4500 comes with a NiMH rechargeable battery pack as a standard feature. The 4000/4100 comes with AA alkalines, but users can purchase the rechargeable battery pack as an option.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on CD ROM includes bFAX Express; Voice Recorder; Image Editor; Sharp Zaurus Data Transfer; Microsoft Windows CE Services; IntelliMigrate; Microsoft Schedule+ 7.0a.

ACCESSORIES: Docking Station Kit (includes docking station, NiMH rechargeable battery pack, AC adapter); NiMH Rechargeable Battery Pack; Digital Camera Card.

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PowerCD Handheld PC Magazine March/April 1998

Windows CE shareware and freeware mentioned in this issue and available on our PowerCD supplemental CD ROM and at our website: www.thaddeus.com

Program	Description (shareware/freeware status)	Page No.
BFM Casion Game Pack	Ten popular casion games for H/PCs (Shareware)	33
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Digger	Tunneling game - runs with BasiCE (Freeware)	na
Martians	Shoot the Martians game (Demoware)	na
MFCWCE	Library (needed by many of these games) (Freeware)	na
OpenStop	Stopwatch program (Shareware)	na
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Project Gutenberg Etexts on this issue's Power CD

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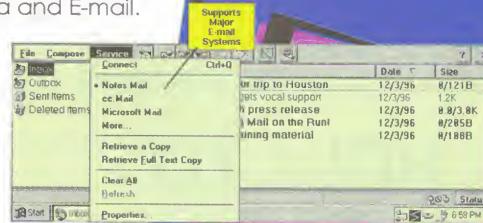
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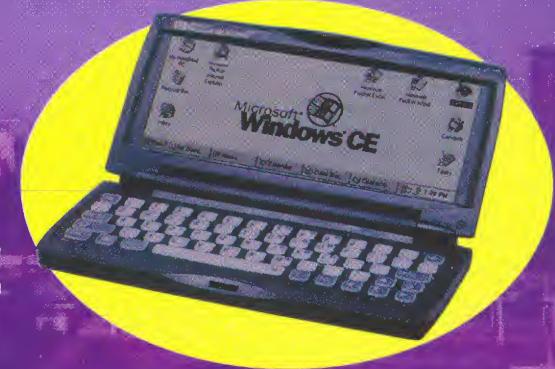
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